TOSHIBA

TOSH-02740

SERVICE MANUAL

COLOUR TELEVISION

TYPE

20 VL 33 G2

S

COLOUR TELEVISIONS

20 inch LCD TV
Service Manual

CONTENTS	PAGES
Safety instructions	1
Technical specifications	2
Instruction manual	3
Interconnection Guide	14
Block diagram	15
Data sheet of important IC's and parts	16
Service Mode and Adjustments	32
Waveforms	33
Part List	36
Frequency list of channels	38

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. Always use the manufacturer's replacement safety components. The critical safety components marked with ▽ on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock , fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred , replace those components that indicate evidence of overheating.

2. After servicing , see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.

3. When the receiver is not being used for a long time of period of time , unplug the power cord of the Adaptor from the AC outlet.

Color TFT LCD Module is very sensitive both electrically and physically. Users, therefore, are requested to follow the "Guidance of handling color TFT LCD Module" on the followings.

1 - Be careful not to make scratch on the polarizer.

Surface of polarizer is soft and can be physically damaged easily.
Please do not touch, push or rub polarizer surface with materials over HB hardness.

2 - Keep clean the surface.

Please wear rubber glove when touch the surface of LCD screen. Please use soft and anti-static material as cleaner.

3 - Keep out of water.

Water on/in the LCD may cause electrical short or corrosion. Please wipe out dry or water carefully.

4 - Prevent swift Temperature & Humidity change.

Instantaneous temperature and/or humidity change can make dew or ice which cause nonconformance such as malfunction.

5 High temperature & high humidity reduce the life-time.

LCD is not proper to be used at high temperature and high humidity. Please keep specified temperature and humidity condition.

6 - Keep out of Corrosive Gas.

Corrosive gas effect the polarizer and the circuit chemically and cause defects accordingly.

7 - Electrostatic discharge can make Damage

There are electro-static sensitive components such as CMOS in LCD Module. Please earth human body when handle the LCD.In addition, please do not touch the interface connector pin with bare.

8 - Do not operate for a long time under the same pattern

Operating LCD for a long time under the same pattern can cause image persistence and can damage it. Please follow following guidance.
1. Turn the power off when do not use.
2. Change the pattern periodically.

TECHNICAL SPECIFICATIONS

Power source	15VDC , 4.5A	
	Adaptor input 100-250VAC 50/60Hz	
Aerial Impedance	75Ohm, Coaxial Type	
Receiving System	PAL SECAM BG	
	PAL SECAM BG DK	
	PAL I	
	PAL SECAM BG LL'	
	NTSC (4.43,3.58) tru Scart	
Receiving channels	VHF I Band, CH2-4	
	VHF III Band, CH5-12	
	CABLE Band, S1-S41	
	UHF Band, CH21-69	
TFT LCD Panel	Screen diagonal	20.1 inch
	Display area	408(H) X 306(V) mm
	Number of Pixel	640 X 480 Pixel
	Display Colors	16.7 million color
	Response Time	11ms (typ.)
	Contrast ratio	450:1
	Brightness	450 Cd/m2
	Viewing angle	80h / 75v
	Pixel pitch	0.6375 mm X 06375 mm
	Back Light	6 CCFT
Teletext	Text, Fastext, Toptext	
	Page memory 100	
External Connections	Standard VGA Connector	VGA resolution, 56-85Hz Vertical
	AV1 (AV in-out and RGB connection)	
	AV2 (AV in-out)	
	AV3 (AV input from cinch connector)	optional
	AVS (SVHS input)	optional
	Audio line outputs (cinch connector)	
Audio Outputs	2X3W RMS Audio output (at %10 THD)	
	Stereo Headphone	
	A2 stereo, Nicam	
Power Consumption	70W	
	2.5W at Stand by	

Getting started

Remove your Television carefully from the box. You may wish to store the packaging for future use.

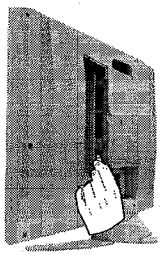
In the box

Inside the cartoon box you should have:
- Accessories box
- Power cord
- Adapter
- Remote control
- Batteries

Read these instructions before use.

Aerial connection

To connect an aerial, plug the aerial lead into the aerial socket on the rear of the TV.



You can use an outdoor or indoor aerial. However, if you use an indoor aerial the quality of the reception may be reduced and adjustment of the aerial may be required when changing programs.

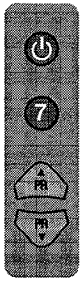
Please note
If you live in a poor reception area or use an indoor aerial you may experience loss or corruption of teletext transmissions.

Switching on and First Use

1. Connect the power cord to the mains plug.
2. Connect the input socket of the adapter to the 15 V DC socket at the back panel of the LCD TV.
3. Connect adapter to the mains plug.

Note 1: Your TV will move to stand-by mode in five minutes when there is no broadcast signal.
Note 2: Your TV is equipned to operate with front panel buttons, "MENU", "PR+", "PR-", "+", "-" in case your R/C is broken or you run out of batteries.

Please Note
When not in use disconnect the plug from the mains power supply.



4. Press the **Power** button on the front of the TV. The standby indicator will illuminate.

5. Press a **Numeric** button or the **Program up** or **Program down** button on the remote handset or **Program up, Program down** or **MENU** button on the front panel to switch the TV on.

The standby indicator remains on. The picture will appear after a few seconds.

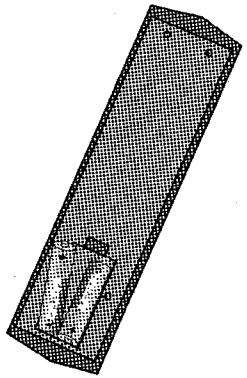
Press the **Standby** button to switch the TV to standby. The standby indicator will brighter.

Please Note
Do not leave the television on standby unattended or overnight.

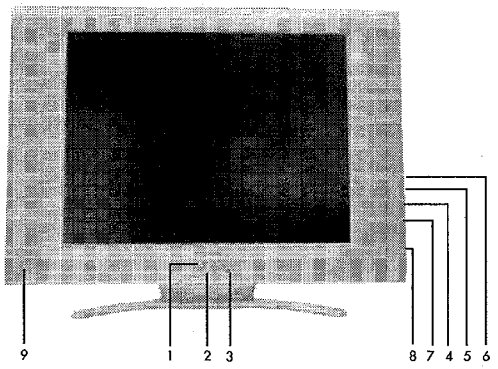
Switching the TV on for the first time
To install your TV, please read the sections "TV controls" and " Tuning the television".

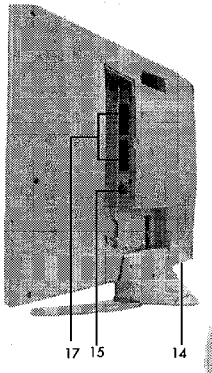
Battery fitting

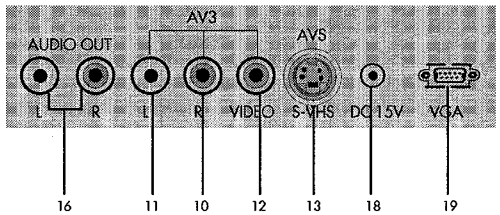
Insert the 2 AAA Batteries supplied into the compartment on the rear of the remote control, ensure you follow the polarity diagram inside the compartment.



Control Unit







1. Stand-by
2. Power on / off
3. Remote control
4. Menu button
5. Volume up
6. Volume down
7. Program up
8. Program down
9. Speaker
10. Audio RCA (R)
11. Audio RCA (L)
12. Video input CINCH connector
13. S-VHS
14. Headphone
15. Antenna input
16. Audio out (R,L)
17. 2 Scart
18. DC 15V Power supply input
19. VGA

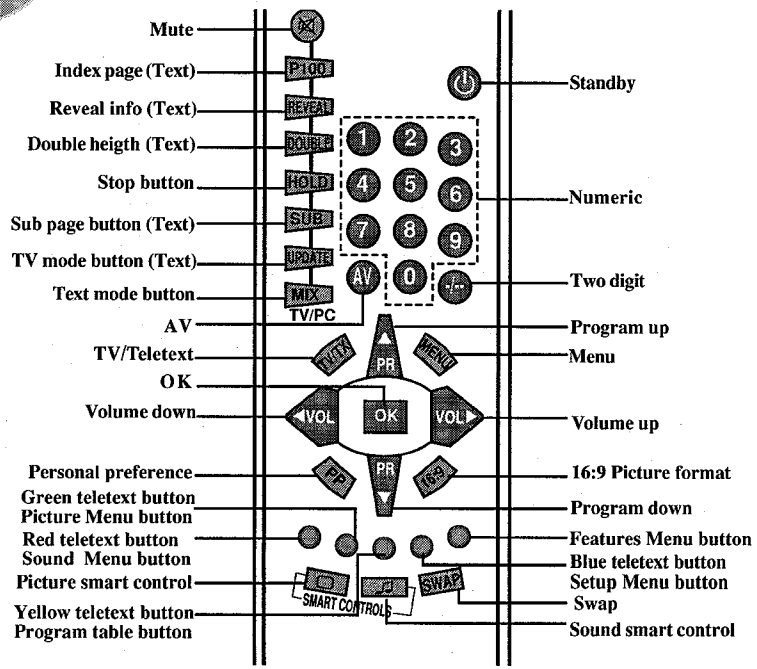
Please note
- See the external connections table on next page for avaible connections.
- Do not use Video RCA and S-Video connections at the same time, otherwise they will effect the picture each other.
- RGB inputs from scart will give you better picture quality.

External connections table

Picture tube size/type	20" 4:3
AV1 Scart	STD.
AV2 Scart	STD.
Headphone socket	STD.
Audio/Video RCA	STD.
S-Video socket	STD.
Back audio out	STD.

STD : Standart
OPT : Optional
N/A : Not available

Remote control

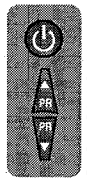


Using the TV

Turning on for the first time and Tuning

TV controls

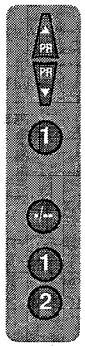
Stand-By mode



When your TV is working on, press the red "STAND-BY" button on the right upper corner of your remote control to switch off and the Stand-By indicator (Led) will be brighter. To turn on your TV again, press one off the numaric buttons, **Program up** or **Program down**.

Please Note: If you will not use your TV for a long time, do not leave it on Stand-By mode, instead switch it off from the power button on the front panel of the TV set.

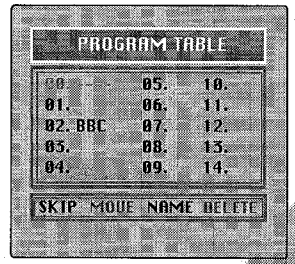
Programme selection



Press the **Program up** or **Program down** buttons on the TV or remote control or press a **Numeric** button to select a programme.

To select a programme whose number is greater than 9 using the numeric buttons, press the **-/--** button first and then press the two **Numeric** buttons. For example, to select programme 12, press the **-/--** button followed by **1** and then **2**.

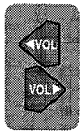
You can also select a program by pressing in the Yellow button to see the Program Table.



Use the **Program up** and **Program down** buttons to scroll through the programme numbers. When you find the program number you want press the **OK** button again.

Press the **TV/TX** button to close the Program Table.

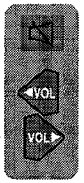
Volume



Press the **Volume +** or **Volume -** button on the TV or the **Vol□** or **Vol□** button on the remote control. A sound level bar will appear on the screen.

Mute

To mute the sound press the **Mute** button on the remote control. A loudspeaker symbol will appear on the screen.



Press the **Mute** button again to restore the sound. The symbol will disappear.

Pressing **Volume up** buttons will also restore the sound. But pressing the **Volume down** button will decrease the volume without restoring.

PP

Personal preference. Press the **PP** button to revert to the default settings for the TV. (See TV setup).

Swap

Select the programme you would like to recall by pressing **SWAP** button. Selected programme number will appear on the lower left side of the screen. While watching any programme, you can recall the selected one by pressing **SWAP** button again. If you press swap button again you can recall the last programme you watched. You can cancel SWAP function by pressing **MENU** button.

PR 01 ➡ (SWAP) PR 11 ➡ PR 12 ➡ PR 13...➡ (SWAP) PR 01

AV

Your TV has 2 scarts so every time you press your AV button, your input will change as follows:

1 AV1 when using SCART socket 1 (RGB support).
2 AV2 when using SCART socket 2.
3 AV3 when using the RCA sockets of the TV.
4 AVS when using the S-video socket.

Press the **AV** button again to return to TV.

Tuning the television

There are two ways of tuning your television: Manual, where you control the tuning process or
Autoprogram where the television does it all automatically.

Your TV will sort all the channels with the ATS. Sorting will be performed in the following order:

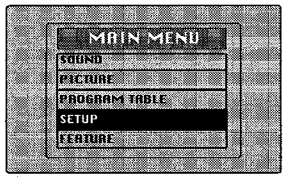
a- Selected country's channels with teletext and channel names.
b- Selected country's channels with teletext and without channel names.
c- Selected country's channels without teletext.
d- Foreign channels with teletext and channel names.

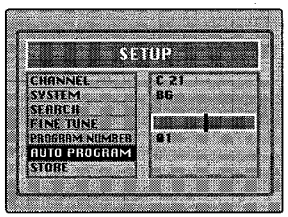
Please Note
If the TV is set to a channel with no signal the TV will return to standby in 5 minutes. The last minute remaining is displayed on the screen.

Automatic tuning (Autoprogram)

There are two ways to access the SETUP menu:

Press the blue **Setup** button.
or
Press the **Menu** button and use the **Program down** button to select SETUP. Press the **OK** button to enter the SETUP menu.





Please note
The system will be displayed automatically on SYSTEM row i.e.BG, L, I or DK depending the receiving broadcasting system of your country. In some countries the broadcasting system can be both in BG/DK or BG/LL´. Only the TV sets produced with Pal Secam BG/DK or Pal Secam BG/LL´ systems can receive both BG/DK or BG/LL´ broadcasts. In this case the user can select the required SYSTEM using **Volume up/down** buttons.

Please note
If you do not press any buttons for 15 seconds the TV will exit the menu system.

Use the Program down button to select AUTOPROGRAM and press the OK button. A list of countries will appear. Select the desired country using **Program** and **Volume** buttons.

When you are sure the aerial is connected properly press the **OK** button. Autoprogam will start.

To cancel Autoprogram whilst it is working press the **Menu** button repetitively.

As Autoprogram stores a channel it will appear briefly on the screen before the search continues.

Your TV is now tuned and ready to use.

Please note:

If auto sort fails to arrange the programmes in the required sequence please refer to programme organising.

Manual tuning
If you want to tune manually:

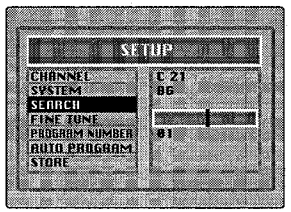
In the Setup menu select PROGRAM NO using the **Program down** button and use the **Volume up** button to change the Program No to 01.

Starting with Program 01, tune in the first channel as follows:

Use the **Program down** button to select SEARCH.

Press the **Volume up** or **Volume down** button to start the tuning search.

When the search finds a strong channel signal it will stop searching. The picture will appear.



Use the **Program down** button to select PROGRAM NO.

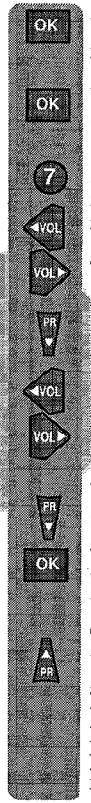
Use the **Volume up/down** or numeric buttons to select the desired programme number.

Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again SEARCH and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

Tuning with channel numbers
Enter the SETUP menu by pressing the blue button.



Press **OK** button when CHANNEL row is blue.

Use OK button to select "S" for cable channels and "C" for terrestrial broadcast.

Enter the channel number using the Numeric buttons or use the **Volume up/down** buttons to tune channels.

Use the **Program down** button to select PROGRAM NUMBER.

Use the **Volume up/down** or numeric buttons to select the desired programme number.

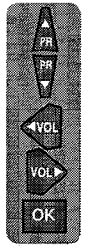
Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again CHANNEL and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

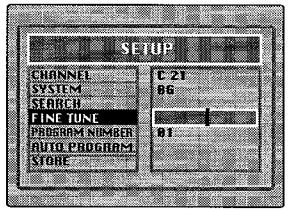
To exit the SETUP menu press the TV/TX button.

Fine tuning
Although the search and Autoprogram will automatically try and tune to the best reception, in areas of poor reception a bit of fine tuning may be required.



In the SETUP menu use the Program up/down buttons to select FINE TUNING. Use the Volume up and Volume down buttons to fine tune.

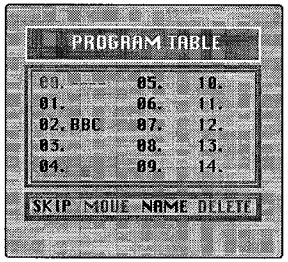
When you have finished use the **Program down** button to select STORE and press the **OK** button.



Program organising

Once you have tuned in all the channels you want, you can change their programme number, if required, and name them.

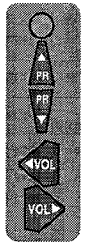
To enter the PROGRAM TABLE menu press the **Menu** button and select PROGRAM TABLE and press the **OK** button or press directly the **Yellow** button.



The buttons used to edit the programs are shown at the bottom of the display:

Blue button	-	Name
Green button	-	Move
Pink button	-	Delete
Red button	-	Skip

To name the programmes



You can name the programmes and AV inputs.

Press the Blue button, the selected programme will be highlighted.

Use the **Program up** and **Program down** buttons to select the letters and numbers and the **Volume up** and **Volume down** buttons to move through the name.

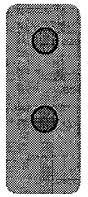
Press the **Blue** button again to store the name.

Repeat this process to name all the programmes.

Please Note
1. Some TV channels may send their names with teletext transmission. In this case their names will be automatically shown on the name line.

1. Child locked programmes will be shown as "🔒"

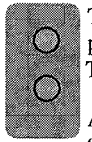
To move the programmes
You can move the programmes around the programme list to the order you want



Select the programme you want to move and press the **Green** button. The programme will turn to yellow. Select the number you want to move and press the **Green** button again and the programme will be moved to that number.

All the following programmes are shifted down by one place.

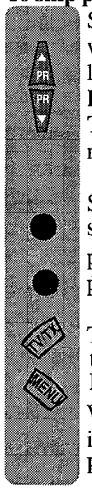
To delete a programme



To delete a programme, select it and press the **Pink** button.
The programme will be deleted.

All the following programmes are shifted up by one position.

To skip programmes



Skipped programmes will not appear when you move through the program list using the **Program up/ Program down** buttons.
They can still be selected using the numeric buttons or the OK button.

Select the programs you want to skip and press the **Red** button. The program will turn red. To unskip the program press the **Red** button again.

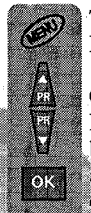
To exit the PROGRAM EDIT press the **TV/TX** button once or the **Menu** button twice.

When you select a programme, the information you entered in the PROGRAM EDIT menu will appear on the top of the screen i.e. P1 BBC1. This will disappear after about three seconds.

TV set up

The TV set up is accessed through a menu system.

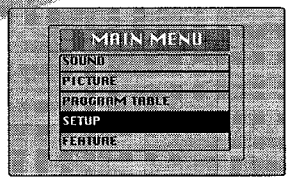
Once you have stored your set up, this is the set up the TV will default to when you switch it on.



To enter the MAIN menu press the **Menu** button.

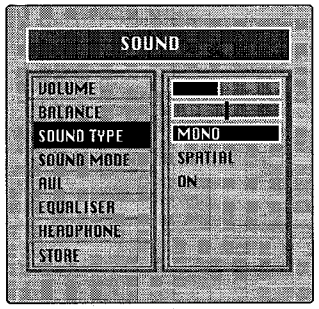
Once in the MAIN menu use the **Program up** and **Program down** buttons to select items in the menu and the **OK** to access sub menus or use the coloured fastext buttons for quick access.

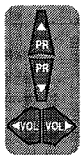
Red button - SOUND
Green button - PICTURE
Pink button - FEATURES



Please note
If you do not press any buttons for 15 seconds the TV will exit the menu system.

Sound menu (red button)



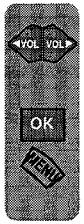


Select the required item in the menu using the **Program up/down** buttons and make the changes pressing **Volume up/down** buttons. Use the OK button to enter HEADPHONE from main menu.

Volume
Sets default volume using the **Volume up** and **down** buttons.

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Balance



Sets the sound balance mode using the **Volume up** and **down** buttons

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Sound type
This item shows STEREO when receiving stereo transmission and MONO for mono transmissions.

The TV can be produced to receive the NICAM broadcasts as a optional feature.

If the channel you are watching is in Nicam stereo the On Screen Display will show NICAM STEREO for a while.

Please Note
If, while watching a nicam stereo channel, the signal strength drops and the system cannot receive nicam stereo the OSD will show MONO. If the signal strength increases again and nicam stereo can be received again, the OSD will show NICAM STEREO.

Dual I/II
Some broadcasters supply the programmes in two languages. To able to listen the second language select DUAL II by SOUND TYPE using **Volume up/down** buttons.

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

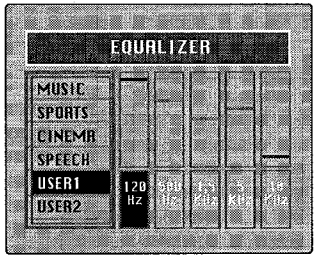
Sound mode
You can select NORMAL or SPATIAL **Volume up/down** buttons.

SPATIAL sound is an 'expanded stereo'. It gives the impression that the two speakers in the TV are further apart than they really are.

AVL
TV transmitters have different sound levels. AVL (automatic volume limiting) maintains the same sound level as you switch from program to program.
To apply this press **Volume up** or **down** button and select **ON** for **AVL** in **Sound Features** menu.

Equalizer

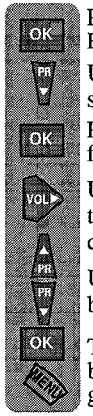
To access the 5 band equalizer menu press **Volume up** or **down** button and press **OK** on the **Equalizer** line.



In this menu there are a series of preset equalizer settings for different types of sound output.
There are four music settings - MUSIC, SPORTS, CINEMA, SPEECH and USER1 & USER2 modes.

MUSIC, SPORTS, CINEMA, SPEECH are factory presets.

USER modes allow you to set your own sound outputs as follows:



Press the OK button to enter the EQUALIZER menu.

Use the **Program down** button to select USER1.

Press OK button to adjust the frequency band levels.

Use the **Volume up** button to select the KHz column you want to change.

Use the **Program up/down** buttons to make the changes.

To save your settings, press the **OK** button. Press the **Menu** button to go back to the previous menu.

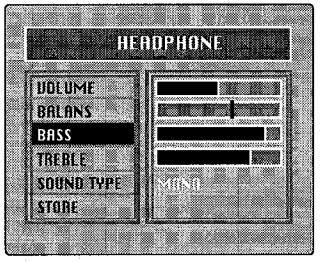
You can also adjust the settings of USER2 by the same method.

You can change the equalizer setting whilst watching the TV using the sound Smart control.

Press the sound **Smart control** to page through the different equalizer settings and select the one you want.

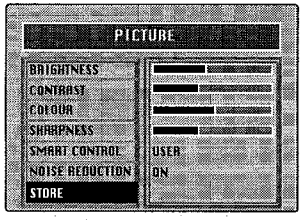
Once you have switched the TV off the equalizer setting will revert to the stored setting.

Headphone
You can set up the volume, balance, bass treble and sound type (stereo or mono) of the headphone output.
Use **OK** button to enter the HEADPHONE menu.

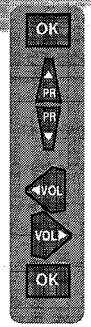


To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Picture menu (Green button)



The picture menu allows you to set up the following:
BRIGHTNESS
CONTRAST
COLOUR
SHARPNESS
SMART CONTROL
and NOISE REDUCTION



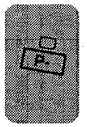
To change, for example, the colour, select it using **Program up** and **down** buttons.

Use the **Volume up** and **Volume down** buttons to change the setting.

To save your settings, select STORE and press the **OK** button. STORED will be displayed.

These settings are stored as USER picture type.

You can change the picture type whilst watching the TV using the picture Smart to control.

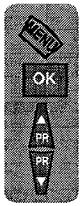


Press the picture **Smart control** page through the different picture types and select the one you want: SOFT, NATURAL, RICH or USER.

NOISE REDUCTION: You can reduce the noise effects in the pictures by selecting ON.

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Features Menu (Purple button)

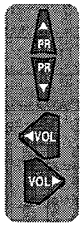


To select **Features** menu press the menu button and using the **Program up** and **down** buttons select **Features**.

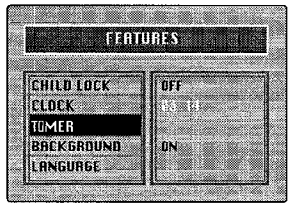
You can also select the **Features** menu directly by pressing the **purple** button on the remote control.

The **Features** menu allows you to set up the following:

CHILD LOCK
CLOCK
TIMER
BACKROUND
LANGUAGE

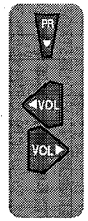


Use the **Program up** and **down** buttons to select the feature you wish to change and use **Volume up** and **down** buttons to adjust this feature.



Child Lock: Using the **Child Lock**, you can lock any Program you want so that adult channels can not be watched by children.

You can cancel child lock any time you want. To cancel **Child Lock**, select **Child Lock** as OFF when you are watching that program.



Clock: Use the numeric buttons to set the real time.

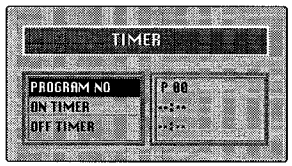
Note: If you enter any channel with teletext transmission, clock will automatically set to real time.

Background: You can adjust the menu background as ON or OFF.

Language: You can select one of the 16 languages by pressing OK button in the language selection.

Timer: Use **Program up** and **down** buttons to select **Timer** in the features menu. Using the Timer fuction, you can switch to a specific programme at a pre-programmed time or you can turn your TV off at the time you want your TV to be turned off.

Press OK to access the **Timer** menu.



On Timer: Use the numeric buttons to set the time that you want your TV to be turned on (TV should be on stand-by mode).

Off Timer: Use the numeric buttons to set the time that you want your TV to be turned off (Stand-by mode).

Program No: Use the numeric buttons to set the programme number that will be shown when you set the **On Time.**

Using Teletext

Teletext is an information system that displays text on your TV screen. Using the teletext control buttons you can view pages of information that are listed in the teletext index.

Please Note
No on screen display is available in text mode. The contrast, brightness and colour cannot be changed but the volume control is still available.

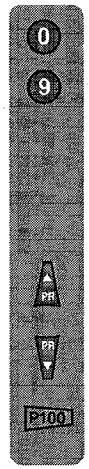
To enter Text mode
Please Note
Make sure the TV channel you are watching transmits teletext. If not NO TEXT sign will be shown on the screen.

Press the **TV/TEXT** button. The text page will appear, normally the index page.

To exit Text mode

Press the **TV/TXT** button. The TV will return to the channel you were watching.

To select a page of text



Find the number of the page in the index and enter it using the **Numeric** buttons. The number of the page will appear in the top left hand corner of the screen.

The page counter will search for your page. When it finds it, the page will be displayed.

To move to the next page of text press the **Program up** button.

To move to the previous page press the **Program down** button.

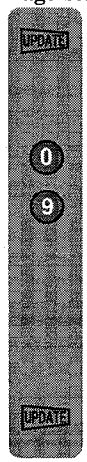
To return to the index page press the **P100** button.

TV/text mix

To view a page of text whilst watching a TV programme press the **MIX** button. The text will be superimposed over the TV programme.

Press the **MIX** button again to return to the text page.

Page search whilst watching TV



In Text mode press the Update button. The TV will return to TV mode with the text page number in the top left hand corner of the screen.

Enter the page number you want using the **Numeric** buttons.

The top line of the text page will appear whilst the text searches for your page. When the page is found the number will remain in the top left hand corner of the screen.

Press the **Update** button to view your selected page of text.

Double height text

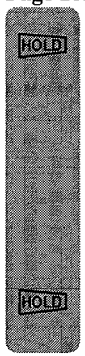
If you have difficulty reading the text on the TV you can double the height of the text.

Press the **Double height** button. The top half of the page will be displayed in double height text.

Press the **Double height** button again. The bottom half of the page will be displayed in double height text.

Press the **Double height** button again to return to the full page.

Page Stop

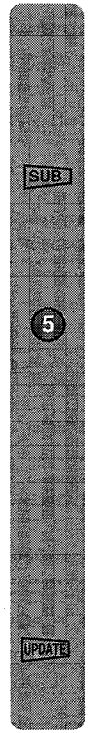


If the page of text you have selected contains sub pages, these sub pages will automatically be displayed in order with a delay to allow you to read the page.

To stop the move to the next sub page press the **STOP** button. STOP will appear in the top left hand corner.

To continue moving through the sub pages press the **STOP** button again.

To select a sub page



If the page of text you are viewing contains sub pages, the number of the sub page you are on and the total number of sub pages is displayed on the right of the screen i.e. 1/7.

To select a sub page press the **SUB** button. Press green button to select next sub-page or prees red button to select previous sub-page.

Enter the number of the sub page, using the **Numeric** buttons in the format S0001 for sub page 1.

The teletext will search for the sub page. This may take some time. To return to the TV whilst the teletext is searching press the **Update** button.

When the page number is found it will appear in the top left hand corner of the screen.

Press the **Update** button again to view the text page.

To reveal information

Press the **Rev** button to reveal concealed information (quiz answers etc.).

Press the **Rev** button again to conceal the information again.

Clock

Press the **Sub** button, whilst watching a TV program , to display the time.

Fast text
At the bottom of the teletext screen is a row of subject headings in red, green yellow and blue.

The remote control has a row of coloured buttons corresponding to the row of coloured subjects on the screen.

Pressing one of the coloured buttons will take you directly to the page corresponding to the subject heading.

Connecting external equipment

You can connect a wide range of audio and video equipment to your TV.

Connecting a video recorder

① Via SCART
Make sure the TV and video recorder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the video recorder and the other end into one of the SCART sockets on the back of the TV.

Switch on the video recorder and the TV.

Press the AV button on the remote control to select AV1 or AV2 to correspond with the SCART socket you are using on the back of the TV.

Please note:
You can connect a RGB external equipment via Scart. It is necessary to you use full Scart cable for this purpose.

Select the video outputs of external device by using its menu to RGB if it's avaible.

② Via RCA lead (optional)
Make sure the TV and video recorder are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the video recorder and plug the other end into the video and audio in sockets of the TV.

If the sound is in mono use the Audio Input L. In the SOUND menu select MONO.

③ Via aerial socket
Make sure the TV and video recorder are both switched off.

Unplug the aerial lead form the TV and plug it into the aerial socket on the video recorder (if fitted).

Plug a coaxial plug into the RF out socket on the rear of the video recorder and plug the other end into the aerial socket of the TV.

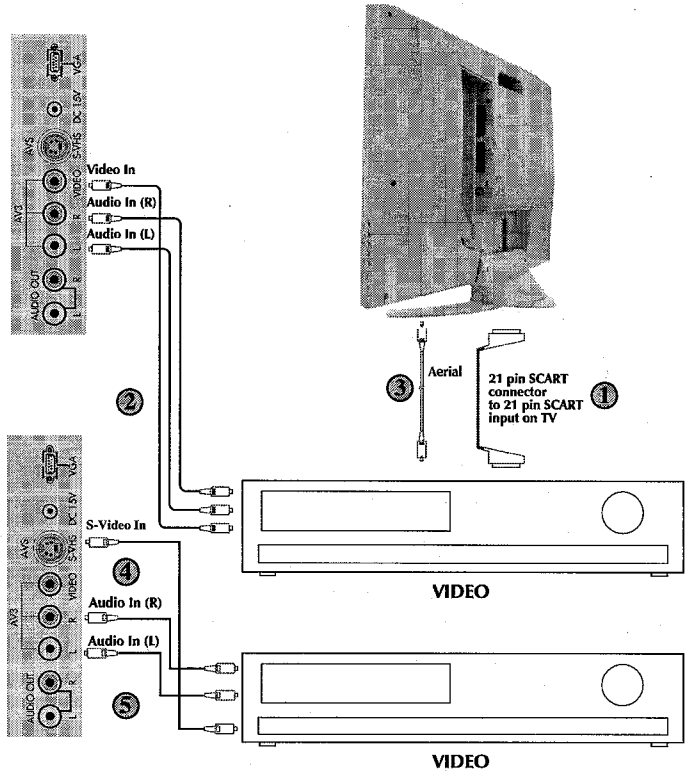
Switch on the video recorder and the TV.

If your video recorder has a test signal, switch it on. (Refer to the video recorder user guide).

See 'Tuning the TV' and carry out the tuning procedure for the video recorder test signal. Select a programme number 0.

④-⑤ Via RCA lead and S-Video socket
You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.



Connecting a DVD player

① Via SCART
Make sure the TV and DVD player are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the DVD player and the other end into the SCART socket on the back of the TV.

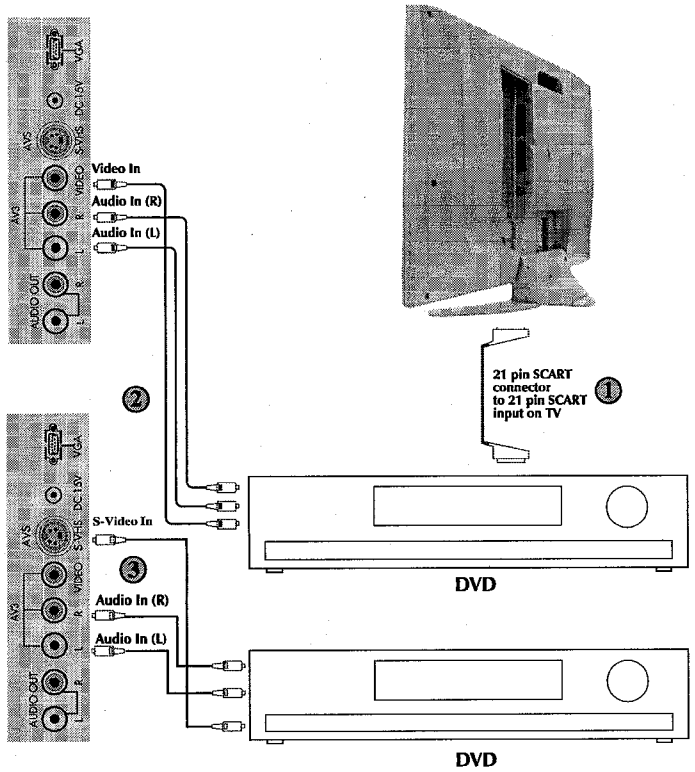
Switch on the DVD and the TV.

② Via RCA lead
Make sure the TV and DVD player are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the DVD player and plug the other end into the video and audio in sockets of the TV.

③ Via RCA lead and S-Video socket
You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

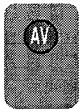


Connecting a decoder

Via SCART
Make sure the TV and decoder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the decoder and the other end into the SCART on the back of the TV.

Switch on the decoder and the TV.

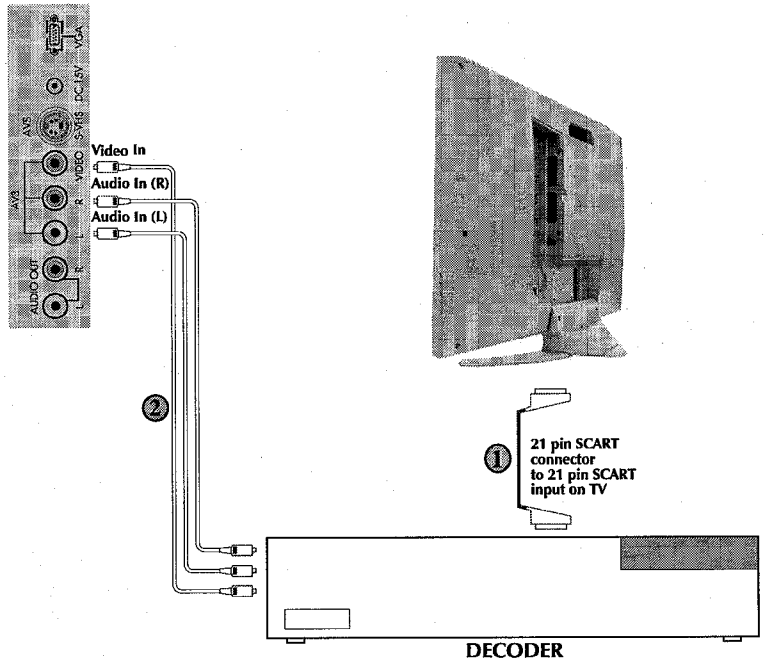


Press the **AV**button on the remote control to select AV1.

② Via RCA lead
Make sure the TV and decoder are both switched off.

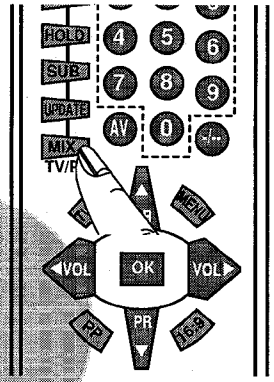
Note: For Decoder connection Via RCA lead your Decoder device should have the tuner built in.

Plug one end of the RCA lead into the video and audio out sockets on the back of the decoder and plug the other end into the video and audio in sockets on the TV.



INTRODUCTION

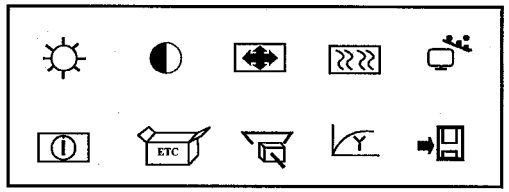
Because your 20"LCD-TV equipment is provided with VGA inputs, it may be used as a PC monitor as well. (Pug&Play)



Entering the PC Mode

To enter the I.CD-TV in to the monitor (PC) mode, the "MIX(TV-PC)" button on your remote control is used. Each time the "MIX(TV/PC)" button is presed, operation changes from the PC mode, press the "MIX" button again. In addition, you may relurn to the TV mode by selecting the "TV SELECTION" option from the monitor menu alternatively.

Note 1: When the system is in the monitor mode, the sound from the TV channel selected may be heard from the speakers. When you enter this mode, the sound control buttons on the remote control. ("VOL▯"/"VOL▯" MUTE) become functional
Note 2: When the system is in the monitor mode, the STANDBY button is operational. Upon exit from STANDBY, the system starts up in the TV mode again.



PC Mode Menu Structure

After chaning to the PC mode, you may acces the monitor menus by pressing the "MENU" button on the front panel of the system

To browse in the menus, you may use the "PR▯"/"PR▯" buttons and Vol+ or Vol- buttons to select the type of adjustment you wish to make. Once you make your selection, you may set the desired adjustment value using the "PR▯"/"PR▯" buttons.

BRIGHTNESS

After entering the Brightness Menu using the "VOL▯"/"VOL▯" buttons, you may set the brightness value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.

CONTRAST

After entering the Contrast Menu using the "VOL▯"/"VOL▯" buttons, you may set the contrast value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.

POSITION

After entering the Position Menu using the "VOL▯"/"VOL▯" buttons, you may set the geometrical adjustment value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.
H-POSITION : Horizontal position adjustment
V-POSITION : Vertical position adjustment

IMAGE

After entering the Image Menu using the "VOL▯"/"VOL▯" buttons, you may set the phase adjustment value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons
PHASE : ADC sampling phase adjustment
CLOCK : ADC clock count Per line

AUTO CONFIG : Allows the entry of optimum geometrical adjustments based on the input mode

INFORMATION : Displays the input mode information on the screen.

MISCELLANEOUS

You may enter the factory default settings, Menu position and duration on the screen, resolution settings etc. by selecting the MISCELLANEOUS option.
FACTORY RESET : Loads the factory default settings
OSD TIMEOUT : The on-screen timeout may be adjusted to a value between 5 - 60 seconds.
OSD POSITION : Used for adjusting the OSD Horizontal and Vertical position
NATIVE MODE : Displays the input cursor in its actual resolution

TV SELECTION : To change from Monitor mode to TV mode

GAMMA : Correction of linear RGB data to compensate for non-linear response of TFT display.

MOIRE : Correction of distortions giving an image of the picture lines superimposed over one another.

SAVE : Stores the settings entered.

NOTE: The user can store the geometrical adjustments (H-Position, V-Position) entered for 6 different input graphic modes. When the Autoconfig is performed, the settings provided for that mode are stored, therefore, activating the Autoconfig function each time the mode is changed, is not necessary. When the user stores the settings for a 7th mode, the first mode stored will be erased

Warning Messages

1. No SYNC: The VGA input code (resolution) is missing. The "NO SYNC" message appears on the display. The message stays on the screen for 30 seconds and if no other VGA input signal that is supported by the system is not provided within that period, the system will go to "POWER SAVING" mode in order to protect the LCD panel. In this mode, the display will turn off, but the sound from the selected tuner channel will be audible

2. Input Not Supported: The input code (resolution) is not a supported graphics mode. The message "INPUT NOT SUPPORTED" appears on the display. The message stays on the screen until a supported graphic input code is received.

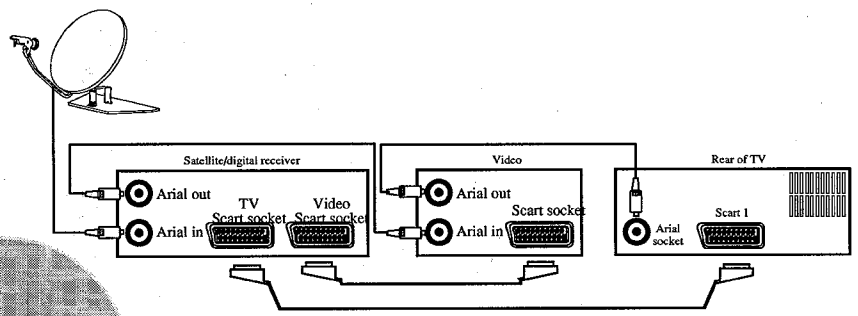
Input Graphic Modes Supported (progressive non-interlaced)

640 x 400 x 56 Hz	640 x 480 x 75 Hz
640 x 480 x 60 Hz	640 x 350 x 70 Hz
640 x 480 x 69 Hz	640 x 480 x 66 Hz (MAC)
640 x 480 x 72 Hz	640 x 480 x 85 Hz

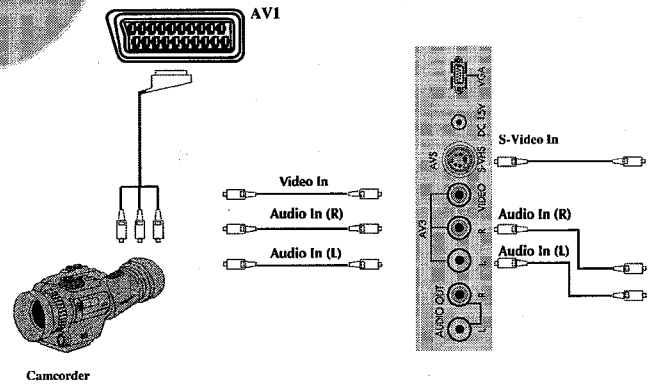
Important Warning:

1. When the system changes from TV mode to VGA mode for the first time, the sound from the speakers is muted, but available through the ear-phones
2. When a particular VGA mode is displayed for the first time, selecting the "Autoconfiguration" option may be necessary. The position adjustment as well as the H-Position and V-Position fine adjustments must be entered and the values "saved (stored)"
3. When the signal is cut off, depending on the VGA power-saving standard, the message "NO SIGNAL" is displayed on the screen for 30 seconds. At the end of this period, the system turns off, providing an energy saving of 30 watts.

Connecting TV with video and satellite/digital receiver

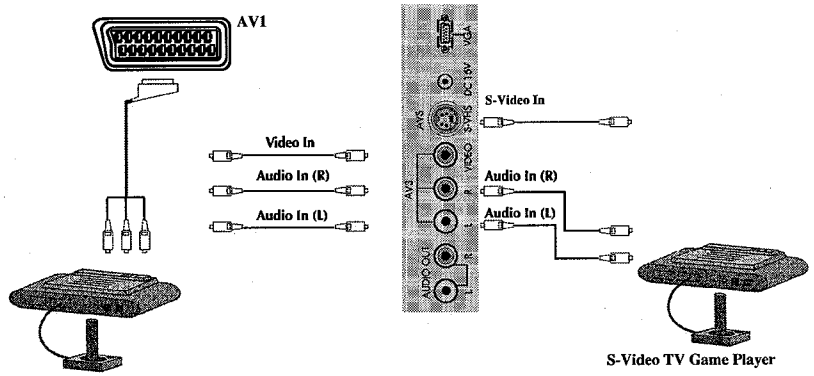


Connecting TV with camcorder



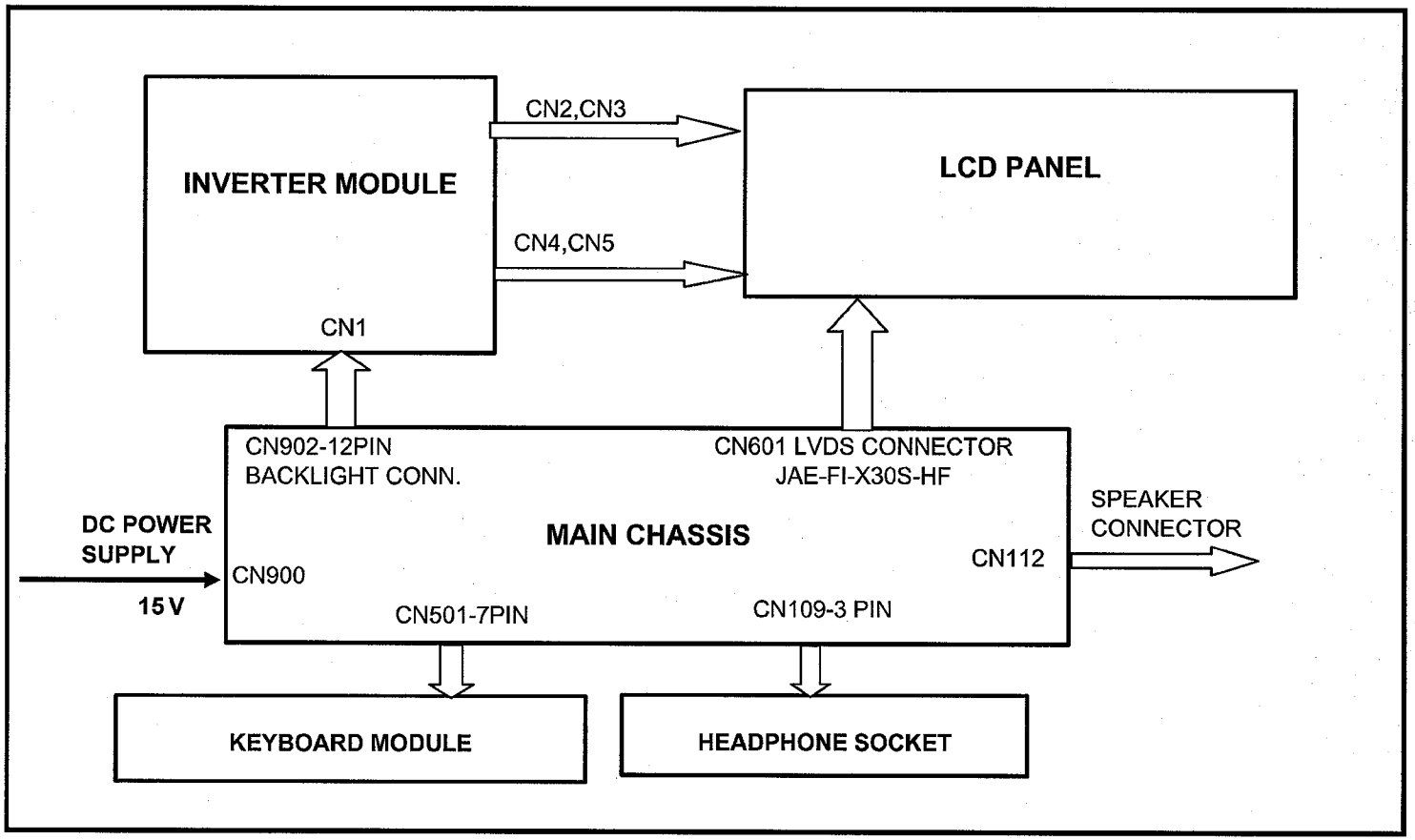
Camcorder

Connecting TV games and computer

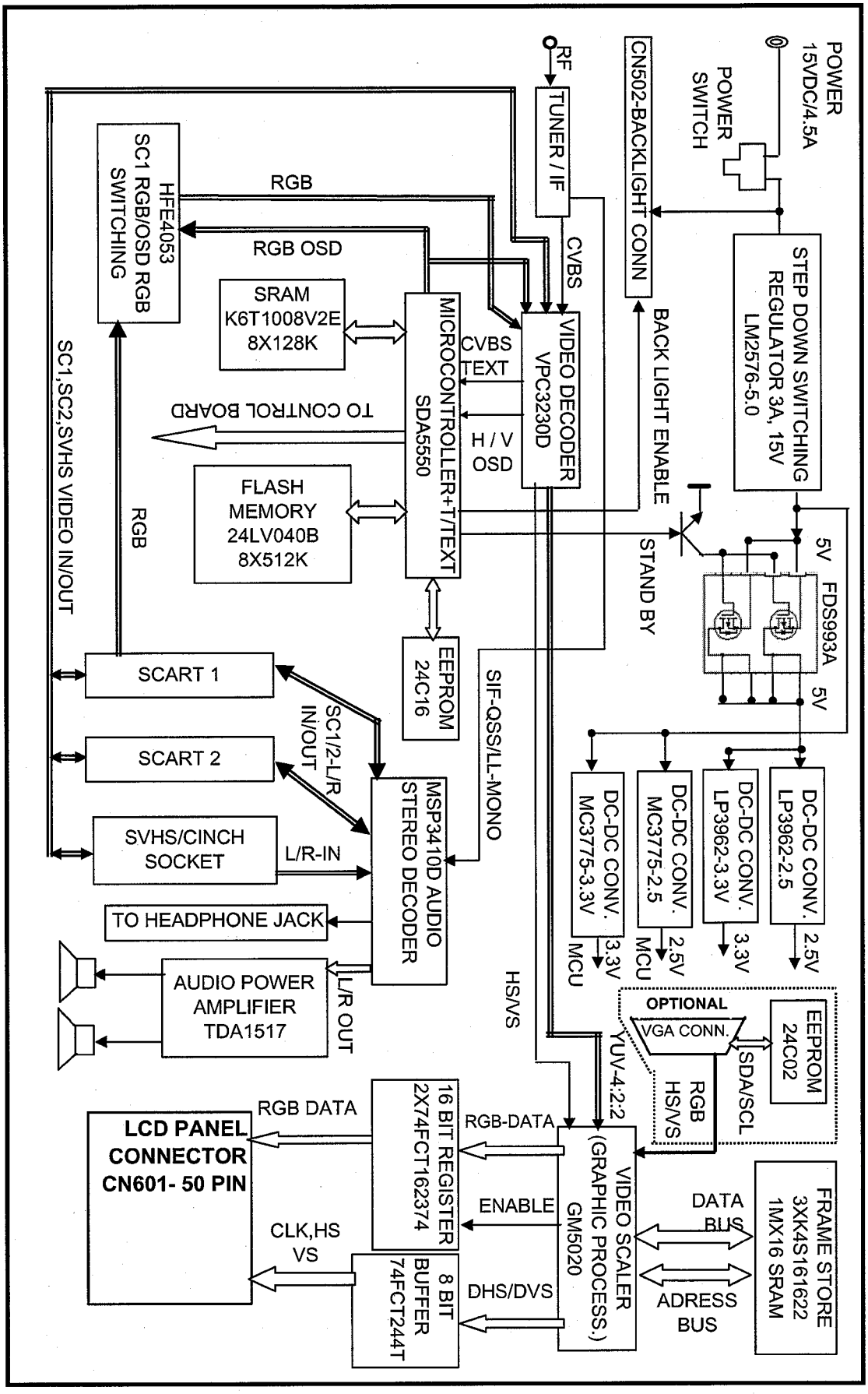


S-Video TV Game Player

INTERCONNECTION GUIDE



BLOCK DIAGRAM



SDA5550 MICROCONTROLLER

Features

General

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package P-SDIP 52, P-MQFP64
- Romless version package P-MQFP100,P-LCC84

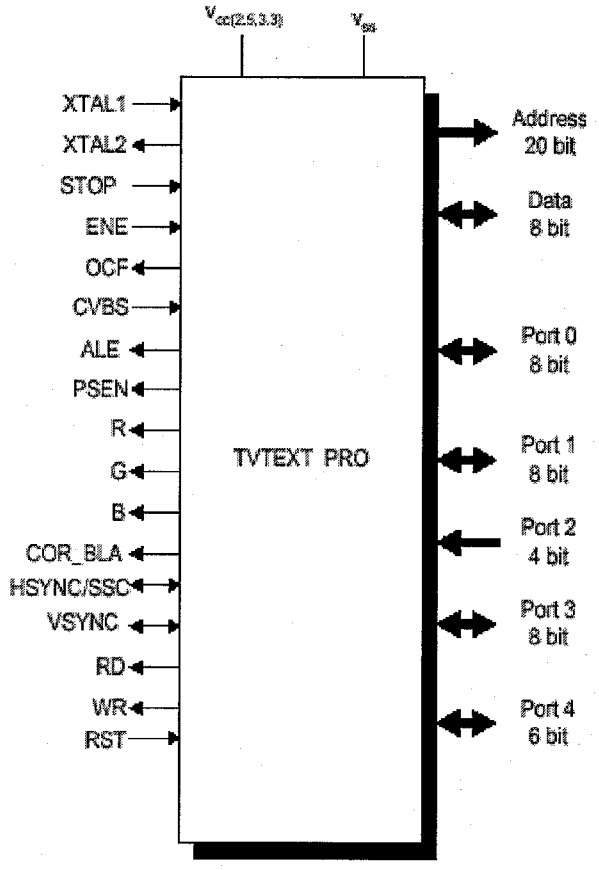
External Crystal and Programmable clock speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers.
- Normal Mode 33.33 Mhz CPU clock, Power Save mode 8.33 Mhz

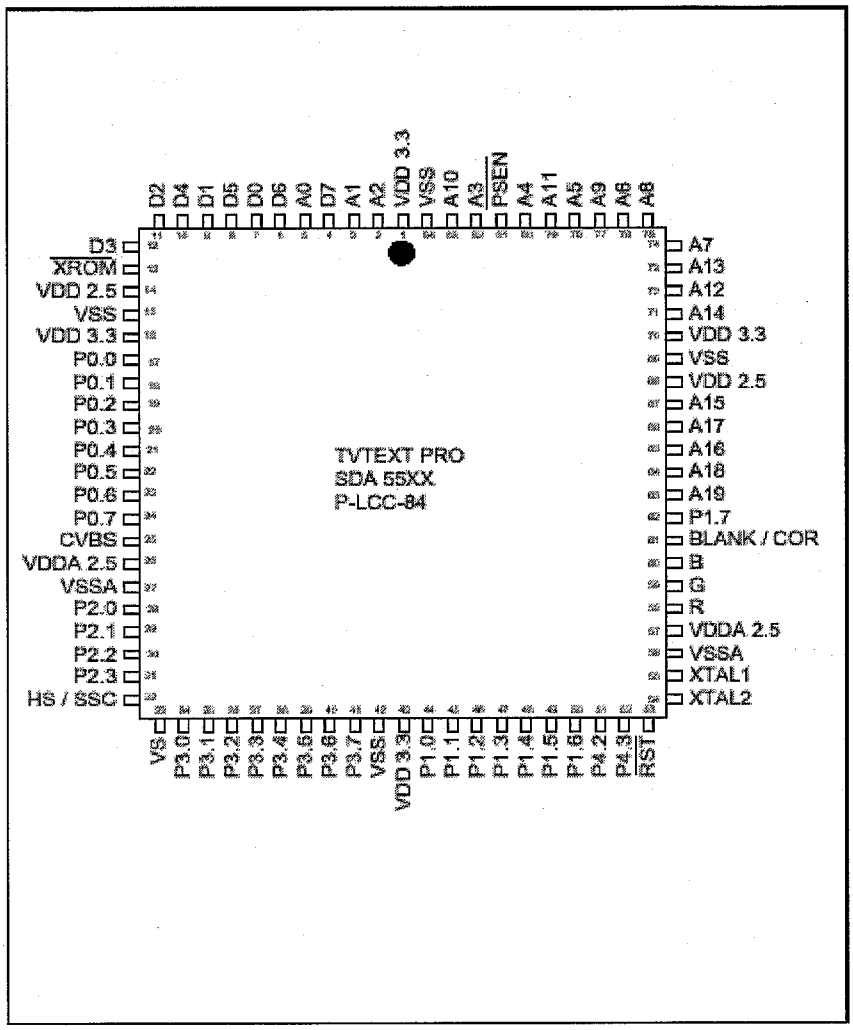
Microcontroller Features

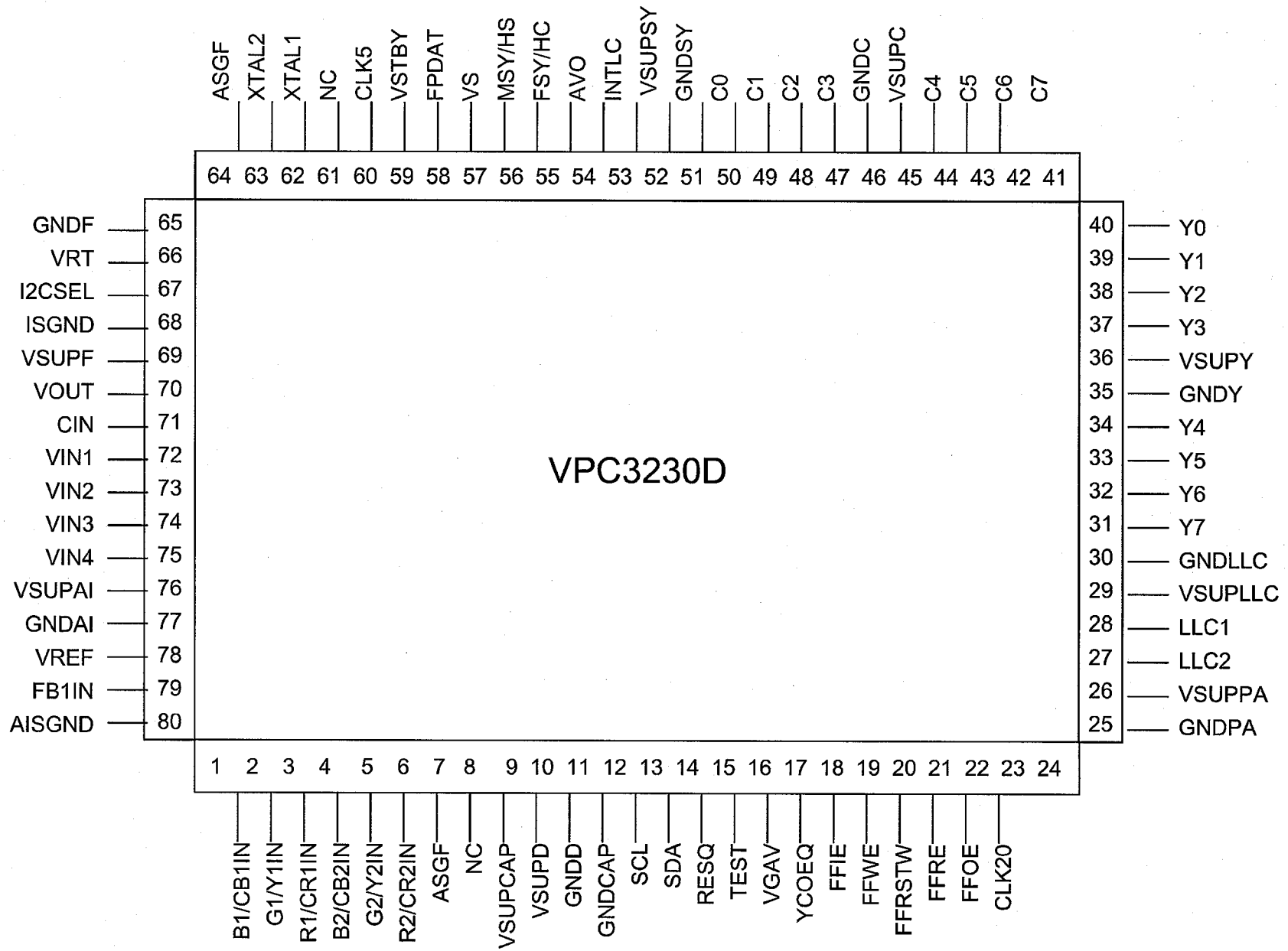
- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360 µs (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART

BLOCK DIAGRAM



Pin Configuration P-LCC-84 (ROMless Version)
(top view)




VPC3230D
64 ASGF
63 XTAL2
62 XTAL1
61 NC
60 CLK5
59 VSTBY
58 FPDAT
57 VS
56 MSY/HS
55 FSY/HC
54 AVO
53 INTLC
52 VSUPSY
51 GNDSY
50 C0
49 C1
48 C2
47 C3
46 GNDC
45 VSUPC
44 C4
43 C5
42 C6
41 C7
65 GNDF
66 VRT
67 I2CSEL
68 ISGND
69 VSUPF
70 VOUT
71 CIN
72 VIN1
73 VIN2
74 VIN3
75 VIN4
76 VSUPAI
77 GNDAI
78 VREF
79 FB1IN
80 AISGND
40 Y0
39 Y1
38 Y2
37 Y3
36 VSUPY
35 GNDY
34 Y4
33 Y5
32 Y6
31 Y7
30 GNDLLC
29 VSUPLLC
28 LLC1
27 LLC2
26 VSUPPA
25 GNDPA
1 B1/CB1IN
2 G1/Y1IN
3 R1/CR1IN
4 B2/CB2IN
5 G2/Y2IN
6 R2/CR2IN
7 ASGF
8 NC
9 VSUPCAP
10 VSUPD
11 GNDD
12 GNDCAP
13 SCL
14 SDA
15 RESQ
16 TEST
17 VGAV
18 YCOEQ
19 FFIE
20 FFWE
21 FFRSTW
22 FFRE
23 FFOE
24 CLK20

1. Features

Video Decoding

- 4 Composite inputs, 1 S-VHS input
- Composite video & sync output
- integrated high-quality A/D converters
- Adaptive 2H comb filter Y/C separator
- 1H NTSC comb filter
- Multi-standard color decoder(1 Crystal)
- Multi-standard sync decoder
- Black line detector

Video Decoding

- Horizontal scaling(0.25 to 4)
- Panorama vision
- Black level expander
- Dynamic peaking
- Soft limiter(gamma correction)
- Color transient improvement

RGB Processing

- Programmable RGB matrix
- Digital color bus interface
- Additional analog RGB/Fast blank input
- Half contrast switch
- Picture frame generator

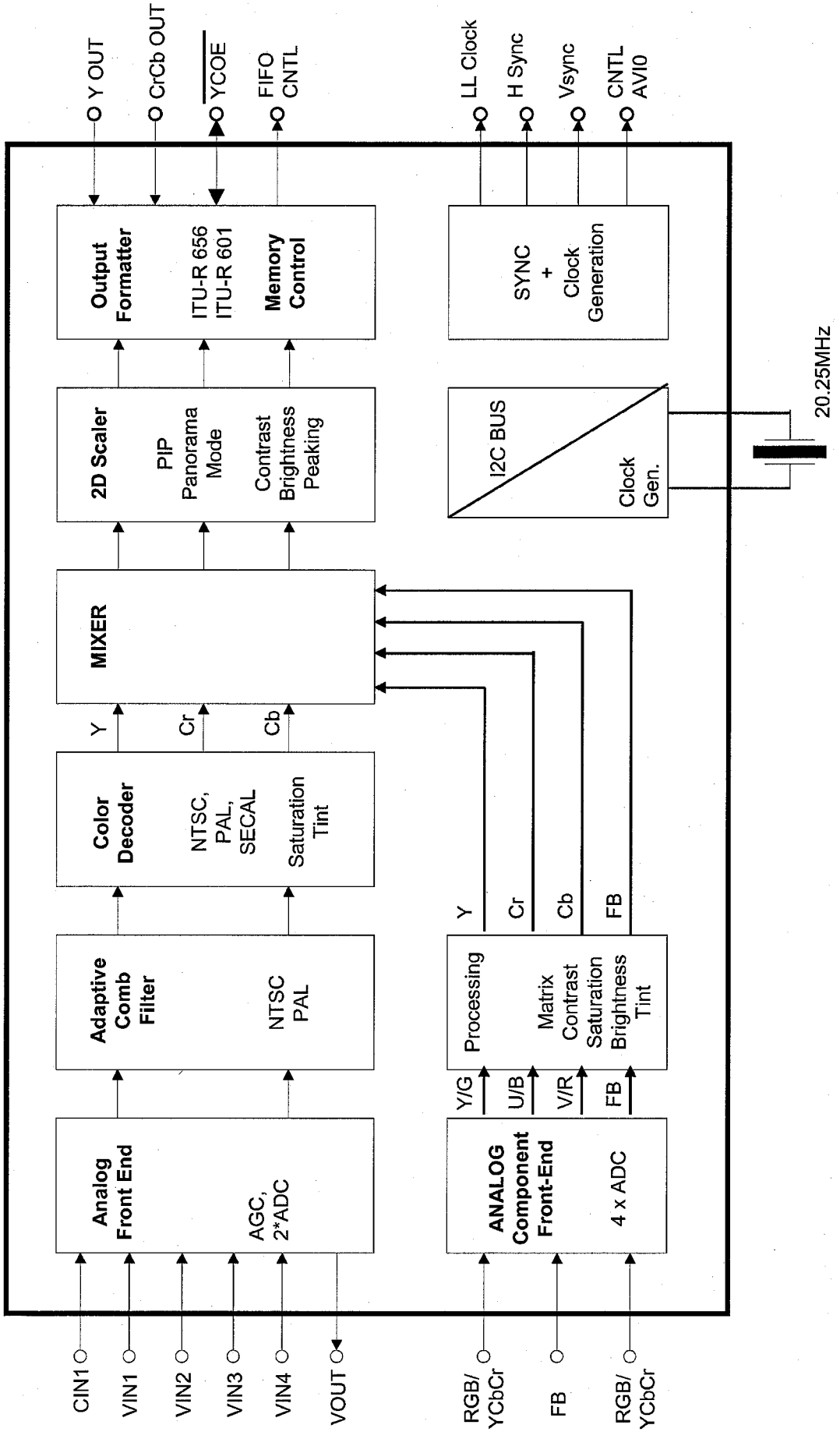
Deflection

- Scan velocity modulation output
- High performance H/V deflection
- Separate ADC for tube measurements
- EHT compensation

Miscellaneous

- One 20.25MHz crystal, few external components
- Embedded RISC controller(80 MIPS)
- I^2C Bus interface
- Single 5V power supply
- Submicrom COMS technology
- 64 pin PSDIP package

Block Diagram



Video Processing - VPC3230D

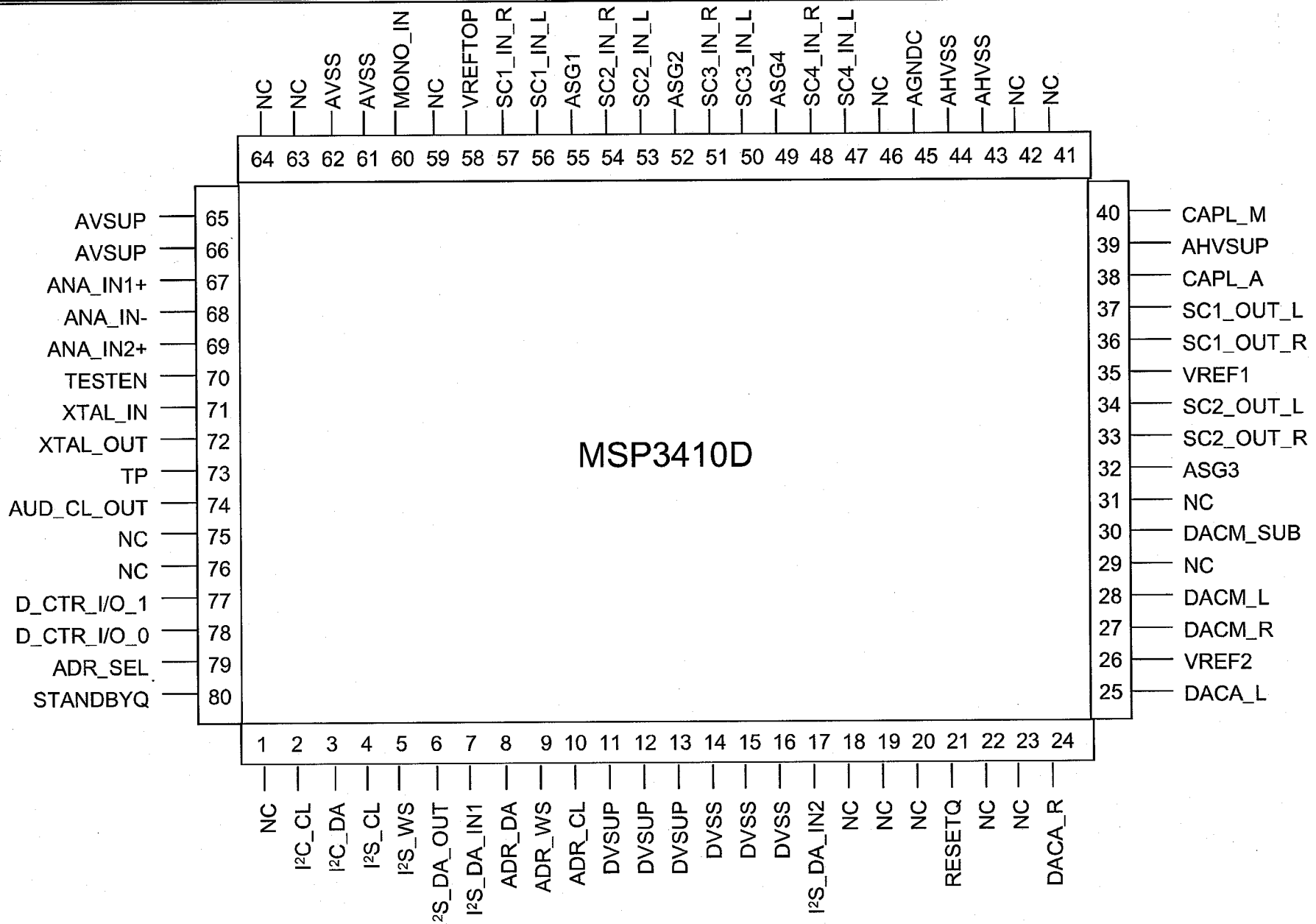
Pin No.	Pin Name	Type	Short Description
1	B1/CB1IN	IN	Blue1/Cb1 Analog Component Input
2	G1/Y1IN	IN	Green1/Y1 Analog Component Input
3	R1/CR1IN	IN	Red1/Cr1 Analog Component Input
4	B2/CB2IN	IN	Blue2/Cb2 Analog Component Input
5	G2/Y2IN	IN	Green2/Y2 Analog Component Input
6	R2/CR2IN	IN	Red2/Cr2 Analog Component Input
7	ASGF		Analog Shield GND F
8	NC	-	No connected
9	V SUPCAP	SUPPLYD	Supply Voltage, Digital Decoupling Circuitry
10	V SUPD	SUPPLYD	Supply Voltage, Digital Circuitry
11	GND D	SUPPLYD	Ground, Digital Circuitry
12	GND CAP	SUPPLYD	Ground, Digital Decoupling Circuitry
13	SCL	IN/OUT	I 2 C Bus Clock
14	SDA	IN/OUT	I 2 C Bus Data
15	RESQ	IN	Reset Input, Active Low
16	TEST	IN	Test Pin, connect to GND D
17	VGAV	IN	VGAV Input
18	YCOEQ	IN	Y/C Output Enable Input, Active Low
19	FFIE	OUT	FIFO Input Enable
20	FFWE	OUT	FIFO Write Enable
21	FFRSTW	OUT	FIFO Reset Write/Read
22	FFRE	OUT	FIFO Read Enable
23	FFOE	OUT	FIFO Output Enable
24	CLK20	IN/OUT	Main Clock Output 20.25 MHz

Pin No.	Pin Name	Type	Short Description
25	GND PA	SUPPLYD	Ground, Pad Decoupling Circuitry
26	V SUPPA	SUPPLYD	Supply Voltage, Pad Decoupling Circuitry
27	LLC2	OUT	Double Clock Output
28	LLC1	IN/OUT	Clock Output
29	V SUPLLC	SUPPLYD	Supply Voltage, LLC Circuitry
30	GND LLC	SUPPLYD	Ground, LLC Circuitry
31	Y7	OUT	Picture Bus Luma (MSB)
32	Y6	OUT	Picture Bus Luma
33	Y5	OUT	Picture Bus Luma
34	Y4	OUT	Picture Bus Luma
35	GND Y	SUPPLYD	Ground, Luma Output Circuitry
36	V SUPY	SUPPLYD	Supply Voltage, Luma Output Circuitry
37	Y3	OUT	Y Picture Bus Luma
38	Y2	OUT	Y Picture Bus Luma
39	Y1	OUT	Y Picture Bus Luma
40	Y0	OUT	Y Picture Bus Luma(LSB)
41	C7	OUT	Picture Bus Chroma (MSB)
42	C6	OUT	Picture Bus Chroma
43	C5	OUT	Picture Bus Chroma
44	C4	OUT	Picture Bus Chroma
45	V SUPC	SUPPLYD	Supply Voltage, Chroma Output Circuitry
46	GND C	SUPPLYD	Ground, Chroma Output Circuitry
47	C3	OUT	Picture Bus Chroma
48	C2	OUT	Picture Bus Chroma

Video Processing - VPC3230D

Pin No.	Pin Name	Type	Short Description
49	C1	OUT	Picture Bus Chroma
50	C0	OUT	Picture Bus Chroma(LSB)
51	GND SY	SUPPLYD	Ground, Sync Pad Circuitry
52	V SUPSY	SUPPLYD	Supply Voltage, Sync Pad Circuitry
53	INTLC	OUT	Interlace Output
54	AVO	OUT	Active Video Output
55	FSY/HC	OUT	Front Sync/ Horizontal Clamp Pulse
56	MSY/HS	IN/OUT	Main Sync/Horizontal Sync Pulse
57	VS	OUT	Vertical Sync Pulse
58	FPDAT	IN/OUT	Front-End/ Back-End Data
59	V STBY	SUPPLYA	Standby Supply Voltage
60	CLK5	OUT	CCU 5 MHz Clock Output
61	NC	-	No connected
62	XTAL1	IN	Analog Crystal Input
63	XTAL2	OUT	Analog Crystal Output
64	ASGF		Analog Shield GND F
65	GND F	SUPPLYA	Ground, Analog Front-End
66	VRT	OUT	Reference Voltage Top, Analog
67	I2CSEL	IN	I 2 C Bus Address Select
68	ISGND	SUPPLYA	Signal Ground for Analog Input, connect to GND F
69	V SUPF	SUPPLYA	Supply Voltage, Analog Front-End
70	VOUT	OUT	Analog Video Output

Pin No.	Pin Name	Type	Short Description
71	CIN	IN	Chroma / Analog Video 5 Input
72	VIN1	IN	Video 1 Analog Input
73	VIN2	IN	Video 2 Analog Input
74	VIN3	IN	Video 3 Analog Input
75	VIN4	IN	Video 4 Analog Input
76	V SUPAI	SUPPLYA	Supply Voltage, Analog Component Inputs Front-End
77	GND AI	SUPPLYA	Ground, Analog Component Inputs Front-End
78	VREF	OUT	Reference Voltage Top, Analog Component Inputs Front-End
79	FB1IN	IN	Fast Blank Input
80	AISGND	SUPPLYA	Signal Ground for Analog Component Inputs, connect to GND AI


MSP3410D
1 NC
2 I²C_CL
3 I²C_DA
4 I²S_CL
5 I²S_WS
6 I²S_DA_OUT
7 I²S_DA_IN1
8 ADR_DA
9 ADR_WS
10 ADR_CL
11 DVSUP
12 DVSUP
13 DVSUP
14 DVSS
15 DVSS
16 DVSS
17 I²S_DA_IN2
18 NC
19 NC
20 NC
21 RESETQ
22 NC
23 NC
24 DACA_R
25 DACA_L
26 VREF2
27 DACM_R
28 DACM_L
29 NC
30 DACM_SUB
31 NC
32 ASG3
33 SC2_OUT_R
34 SC2_OUT_L
35 VREF1
36 SC1_OUT_R
37 SC1_OUT_L
38 CAPL_A
39 AHVSUP
40 CAPL_M
41 NC
42 NC
43 AHVSS
44 AHVSS
45 AGNDC
46 NC
47 SC4_IN_L
48 SC4_IN_R
49 ASG4
50 SC3_IN_L
51 SC3_IN_R
52 ASG2
53 SC2_IN_L
54 SC2_IN_R
55 ASG1
56 SC1_IN_L
57 SC1_IN_R
58 VREFTOP
59 NC
60 MONO_IN
61 AVSS
62 AVSS
63 NC
64 NC
65 AVSUP
66 AVSUP
67 ANA_IN1+
68 ANA_IN-
69 ANA_IN2+
70 TESTEN
71 XTAL_IN
72 XTAL_OUT
73 TP
74 AUD_CL_OUT
75 NC
76 NC
77 D_CTR_I/O_1
78 D_CTR_I/O_0
79 ADR_SEL
80 STANDBYQ

Audio Processing - MSP3410D

Pin No.	Pin Name	Type	Short Description
1	NC		Not connected
2	I2C_CL	IN/OUT	I2Cclock
3	I2C_DA	IN/OUT	I2C data
4	I2S_CL	IN/OUT	I2S clock
5	I2S_WS	IN/OUT	I2S word strobe
6	I2S_DA_O	OUT	I2S data output
7	I2S_DA_IN	IN	I2S1 data input
8	ADR_DA	OUT	ADR data output
9	ADR_WS	OUT	ADR word strobe
10	ADR_CL	SUPPLYD	Supply Voltage, Digital Circuitry
11	DVSUP	SUPPLYD	Ground, Digital Circuitry
12	DVSUP	SUPPLYD	Ground
13	DVSUP	IN/OUT	I 2 C Bus Clock
14	DVSS	IN/OUT	I 2 C Bus Data
15	DVSS	IN	Reset Input, Active Low
16	DVSS	IN	Test Pin, connect to GND D
17	I2S_DA_IN	IN	VGAV Input
18	NC	IN	Y/C Output Enable Input, Active Low
19	NC	OUT	FIFO Input Enable
20	NC	OUT	FIFO Write Enable
21	RESET_Q	OUT	FIFO Reset Write/Read
22	NC	OUT	FIFO Read Enable
23	NC	OUT	FIFO Output Enable
24	DACA_R	IN/OUT	Main Clock Output 20.25 MHz
25	DACA_R	SUPPLYD	Ground

Pin No.	Pin Name	Type	Short Description
26	V SUPPA	SUPPLYD	Supply Voltage
27	LLC2	OUT	Double Clock Output
28	LLC1	IN/OUT	Clock Output
29	V SUPLLC	SUPPLYD	Supply Voltage, LLC Circuitry
30	GND LLC	SUPPLYD	Ground, LLC Circuitry
31	Y7	OUT	Picture Bus Luma (MSB)
32	Y6	OUT	Picture Bus Luma
33	Y5	OUT	Picture Bus Luma
34	Y4	OUT	Picture Bus Luma
35	GND Y	SUPPLYD	Ground, Luma Output Circuitry
36	V SUPY	SUPPLYD	Supply Voltage, Luma Output Circuitry
37	Y3	OUT	Y Picture Bus Luma
38	Y2	OUT	Y Picture Bus Luma
39	Y1	OUT	Y Picture Bus Luma
40	Y0	OUT	Y Picture Bus Luma(LSB)
41	C7	OUT	Picture Bus Chroma (MSB)
42	C6	OUT	Picture Bus Chroma
43	C5	OUT	Picture Bus Chroma
44	C4	OUT	Picture Bus Chroma
45	V SUPC	SUPPLYD	Supply Voltage, Chroma Output Circuitry
46	GND C	SUPPLYD	Ground, Chroma Output Circuitry
47	C3	OUT	Picture Bus Chroma
48	C2	OUT	Picture Bus Chroma
49	C1	OUT	Picture Bus Chroma
50	C0	OUT	Picture Bus Chroma(LSB)

Pin No.	Pin Name	Type	Short Description
51	GND SY	SUPPLYD	Ground, Sync Pad Circuitry
52	V SUPSY	SUPPLYD	Supply Voltage, Sync Pad Circuitry
53	INTLC	OUT	Interlace Output
54	AVO	OUT	Active Video Output
55	FSY/HC	OUT	Front Sync/ Horizontal Clamp Pulse
56	MSY/HS	IN/OUT	Main Sync/Horizontal Sync Pulse
57	SC1_in_R	IN	SCART 1input,right
58	VREFTOP		Reference voltage IF A/D converter
59	NC		Not connected
60	MONO_IN	IN	Mono input
61	AVSS		Analog ground
62	AVSS		Analog ground
63	NC		Not connected
64	NC		Not connected
65	AVSUP		Analog power supply 5V
66	AVSUP		Analog power supply 5V
67	ANA_IN+	IN	IF input 1
68	ANA_IN-	IN	IF common{can be left vacant,only if IF input1 is also not in use}
69	ANA_IN2+	IN	IF input{can be left vacant,only if IF input1 is also not in use}
70	TESTEN	IN	Test pin
71	XTAL_IN	IN	Crystal oscillator

Pin No.	Pin Name	Type	Short Description
72	XTAL_OUT	OUT	Crystal oscillator
73	TP		Test pin
74	AUD_CL_(	OUT	Audio clock output(18.432MHz)
75	NC		Not connected
76	NC		Not connected
77	D_CTR_I/(	IN/OUT	D_CTR_I/O_1
78	D_CTR_I/(	IN/OUT	D_CTR_I/O_0
79	ADR_SEL	IN	I2C Bus address select
80	STANDBY	IN	Stand-by(low active)

LM2576

3.0 A, 15 V, Step-Down Switching Regulator

The LM2576 series of regulators are monolithic integrated circuits ideally suited for easy and convenient design of a step–down switching regulator (buck converter). All circuits of this series are capable of driving a 3.0 A load with excellent line and load regulation. These devices are available in fixed output voltages of 3.3 V, 5.0 V, 12 V, 15 V, and an adjustable output version.

These regulators were designed to minimize the number of external components to simplify the power supply design. Standard series of inductors optimized for use with the LM2576 are offered by several different inductor manufacturers.

Since the LM2576 converter is a switch–mode power supply, its efficiency is significantly higher in comparison with popular three–terminal linear regulators, especially with higher input voltages. In many cases, the power dissipated is so low that no heatsink is required or its size could be reduced dramatically.

A standard series of inductors optimized for use with the LM2576 are available from several different manufacturers. This feature greatly simplifies the design of switch–mode power supplies.

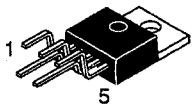
The LM2576 features include a guaranteed ±4% tolerance on output voltage within specified input voltages and output load conditions, and ±10% on the oscillator frequency (±2% over 0°C to 125°C). External shutdown is included, featuring 80 μA (typical) standby current. The output switch includes cycle–by–cycle current limiting, as well as thermal shutdown for full protection under fault conditions.

Features

- 3.3 V, 5.0 V, 12 V, 15 V, and Adjustable Output Versions
- Adjustable Version Output Voltage Range, 1.23 to 37 V ±4% Maximum Over Line and Load Conditions
- Guaranteed 3.0 A Output Current
- Wide Input Voltage Range
- Requires Only 4 External Components
- 52 kHz Fixed Frequency Internal Oscillator
- TTL Shutdown Capability, Low Power Standby Mode
- High Efficiency
- Uses Readily Available Standard Inductors
- Thermal Shutdown and Current Limit Protection
- Moisture Sensitivity Level (MSL) Equals 1

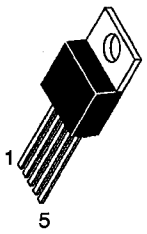
ON Semiconductor™

http://onsemi.com



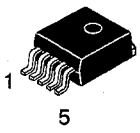
TO–220
TV SUFFIX
CASE 314B

Heatsink surface connected to Pin 3



TO–220
T SUFFIX
CASE 314D

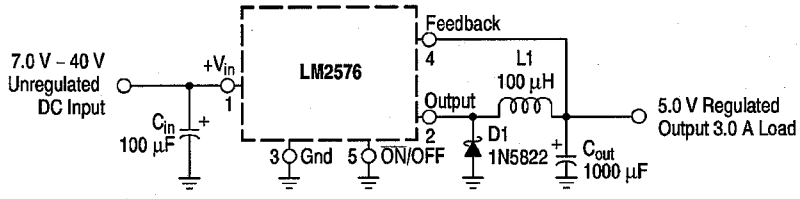
Pin
1. V_{in}
2. Output
3. Ground
4. Feedback
5. $\overline{ON}$/OFF



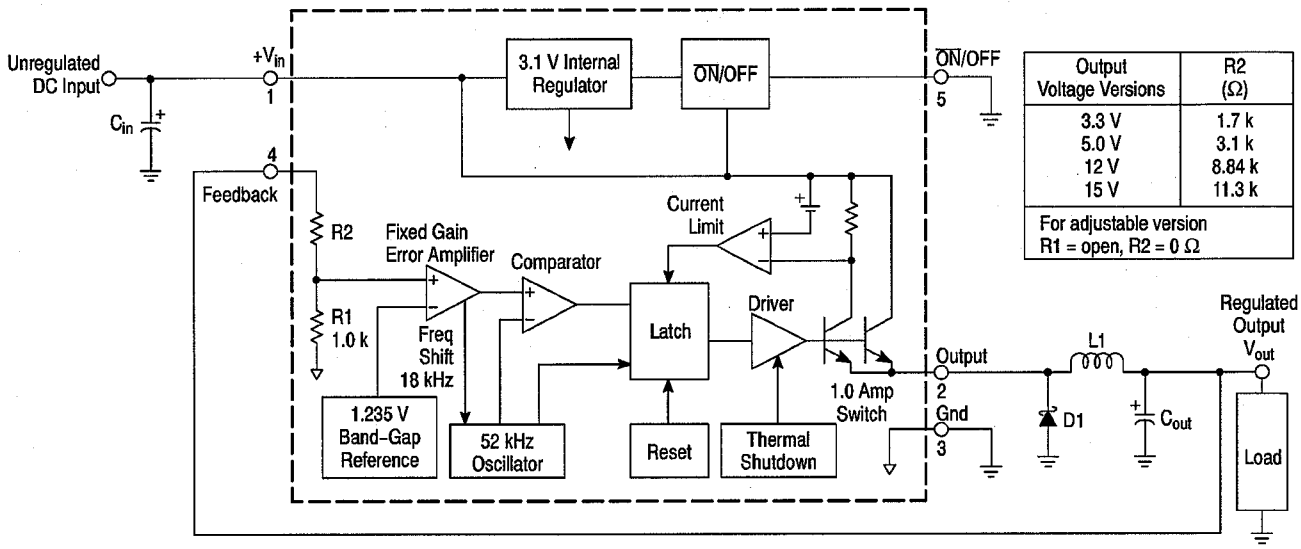
D^2PAK
D2T SUFFIX
CASE 936A

Heatsink surface (shown as terminal 6 in case outline drawing) is connected to Pin 3

Typical Application (Fixed Output Voltage Versions)



Representative Block Diagram and Typical Application



Output Voltage Versions	R2 (Ω)
3.3 V	1.7 k
5.0 V	3.1 k
12 V	8.84 k
15 V	11.3 k
For adjustable version R1 = open, R2 = 0 Ω	

FDS9933A

Dual P-Channel 2.5V Specified PowerTrench™ MOSFET

General Description

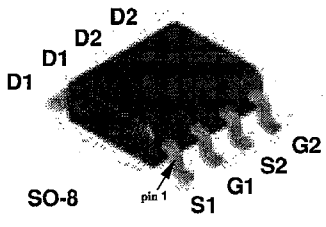
These P-Channel 2.5V specified MOSFETs are produced using Fairchild Semiconductor's advanced PowerTrench process that has been especially tailored to minimize the on-state resistance and yet maintain low gate charge for superior switching performance.

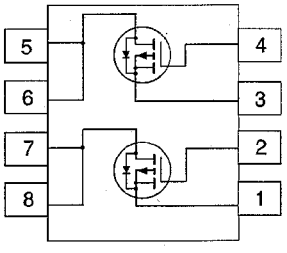
Applications

- Load switch
- DC/DC converter
- Motor drives

Features

- -3.8 A, -20 V. $R_{DS(on)}$ = 0.075 Ω @ V_{GS} = -4.5 V
  $R_{DS(on)}$ = 0.105 Ω @ V_{GS} = -2.5 V.
- Low gate charge (7nC typical).
- Fast switching speed.
- High performance trench technology for extremely low $R_{DS(on)}$.
- High power and current handling capability.





CY74FCT16374T
CY74FCT162374T

16-Bit Registers

SCCS055C - August 1994 - Revised September 2001

Features

- **I_{off} supports partial-power-down mode operation**
- **Edge-rate control circuitry for significantly improved noise characteristics**
- **Typical output skew < 250 ps**
- **ESD > 2000V**
- **TSSOP (19.6-mil pitch) and SSOP (25-mil pitch) packages**
- **Industrial temperature range of –40°C to +85°C**
- **V_{CC} = 5V ± 10%**

CY74FCT16374T Features:

- **64 mA sink current, 32 mA source current**
- **Typical V_{OLP} (ground bounce) <1.0V at V_{CC} = 5V, T_A = 25°C**

CY74FCT162374T Features:

- **Balanced 24 mA output drivers**
- **Reduced system switching noise**
- **Typical V_{OLP} (ground bounce) <0.6V at V_{CC} = 5V, T_A= 25°C**

Functional Description

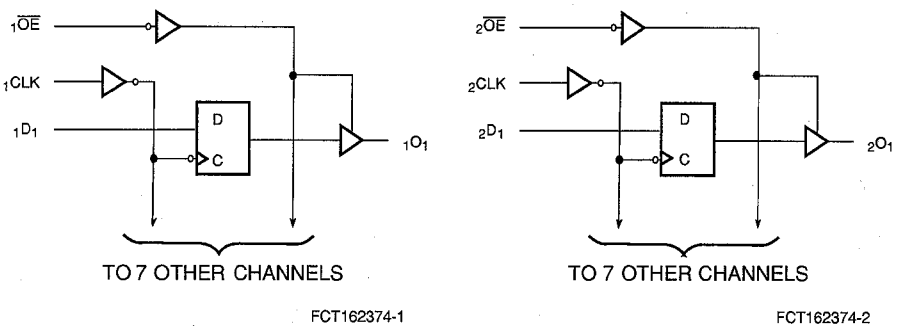
CY74FCT16374T and CY74FCT162374T are 16-bit D-type registers designed for use as buffered registers in high-speed, low power bus applications. These devices can be used as two independent 8-bit registers or as a single 16-bit register by connecting the output Enable (OE) and Clock (CLK) inputs. Flow-through pinout and small shrink packaging aid in simplifying board layout.

This device is fully specified for partial-power-down applications using I_{off}. The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

The CY74FCT16374T is ideally suited for driving high-capacitance loads and low-impedance backplanes.

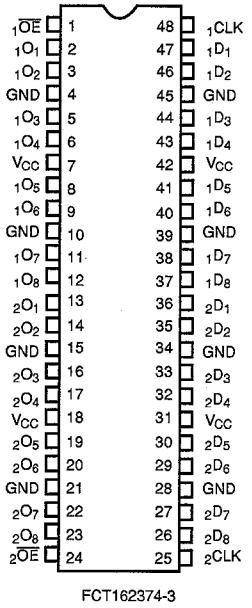
The CY74FCT162374T has 24-mA balanced output drivers with current limiting resistors in the outputs. This reduces the need for external terminating resistors and provides for minimal undershoot and reduced ground bounce. The CY74FCT162374T is ideal for driving transmission lines.

Logic Block Diagrams



Pin Configuration

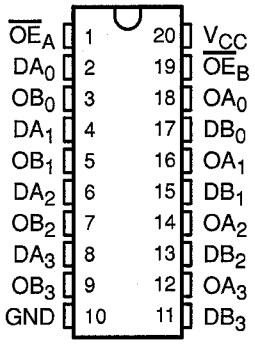
SSOP/TSSOP
Top View



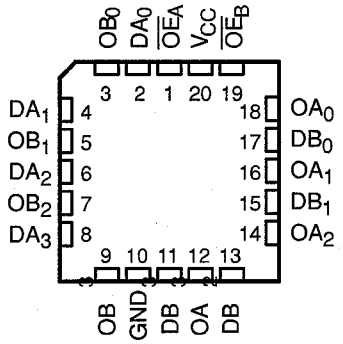
FCT162374-3

- Function, Pinout, and Drive Compatible With FCT and F Logic
- Reduced V_{OH} (Typically = 3.3 V) Versions of Equivalent FCT Functions
- Edge-Rate Control Circuitry for Significantly Improved Noise Characteristics
- I_{off} Supports Partial-Power-Down Mode Operation
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- Matched Rise and Fall Times
- Fully Compatible With TTL Input and Output Logic Levels
- CY54FCT244T
  - 48-mA Output Sink Current
    12-mA Output Source Current
- CY74FCT244T
  - 64-mA Output Sink Current
    32-mA Output Source Current
- 3-State Outputs

CY54FCT244T . . . D PACKAGE
CY74FCT244T . . . P, Q, OR SO PACKAGE
(TOP VIEW)



CY54FCT244T . . . L PACKAGE
(TOP VIEW)



description

The 'FCT244T devices are octal buffers and line drivers designed to be employed as memory address drivers, clock drivers, and bus-oriented transmitters/receivers. These devices provide speed and drive capabilities equivalent to their fastest bipolar logic counterparts, while reducing power consumption. The input and output voltage levels allow direct interface with TTL, NMOS, and CMOS devices without external components.

These devices are fully specified for partial-power-down applications using I_{off}. The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

2. SUITABLE LOAD

LCD-Module: Samsung 17"E4 4lamp TFT LCD

3. ELECTRICAL CHARACTERISTICS

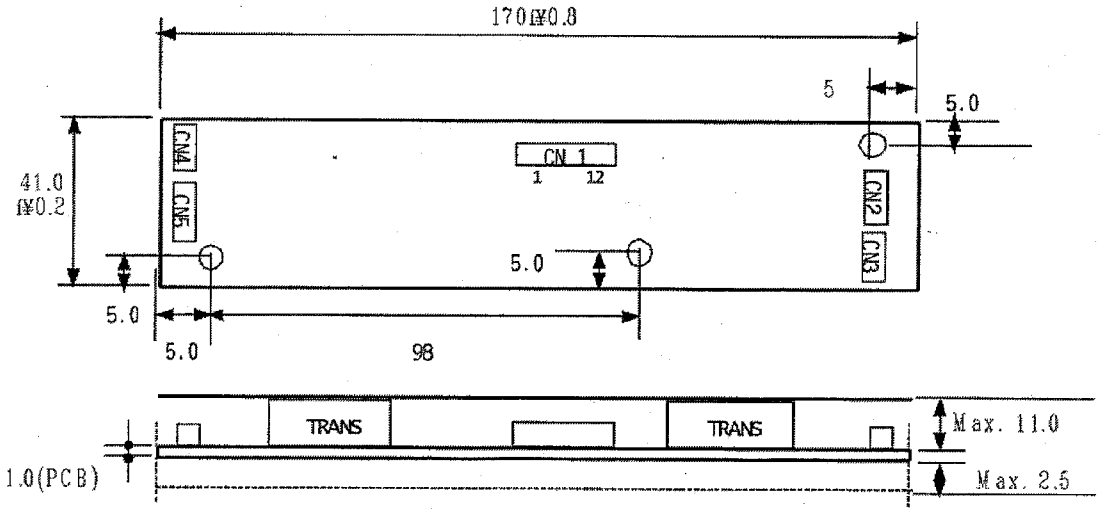
3.1 Absolute Maximum Ratings

Item	Symbol	Spec	Unit
Input voltage 1	Vin1	11.5 ~ 12.5	V
Input voltage 2	Vin2	4.9 ~ 5.1	V
Operating Temperature	Top	0 ~ 50	°C
Storage Temperature	Tstg	- 30 ~ 80	°C
Relative Humidity	RH	90	%

3.2 Control Signal

Pin No.	Symbol	Status	Action	Remarks
CN1 # 4	BKLT_ON	HIGH	LAMP (CCFL) - ON	2.4 ~ 5.25V
		LOW	LAMP (CCFL) - OFF	0.8V max.

5. APPEARANCE



4. INTERFACE

4.1 CN1 Connector: 53261 – 1290

Pin No.	Symbol	Remarks
2	BRT_ADJ	0 ~ 5V
1,3,5,6,8,9	GND	GND
4	BL ON / OFF	CCFL drive signal (active HIGH)
7	N.C	
10,11,12	DC-IN (V in)	DC INPUT power (12V)

4.2 CN2 Connector: SM02B – BHS – 1 – TB(JST)

Pin No.	Symbol	Remarks
1	HOT	HIGH
2	COLD	LOW

4.3 CN3 Connector: SM02B – BHS – 1 – TB(JST)

Pin No.	Symbol	Remarks
1	HOT	HIGH
4	COLD	LOW

4.4 CN4 Connector: SM02B – BHS – 1 – TB(JST)

Pin No.	Symbol	Remarks
1	HOT	HIGH
4	COLD	LOW

4.5 CN5 Connector: SM02B – BHS – 1 – TB(JST)

Pin No.	Symbol	Remarks
1	HOT	HIGH
4	COLD	LOW

SERVICE ADJUSTMENTS AND OPTIONS

Entering the service mode: In TV mode ,Press Menu key and enter "9301".

Exiting from service mode: Press "TV/TX" key (SW version is prompted when exiting from service mode)

Navigation: P+/P- moves upward / downward inside the service menu.
V+/V- changes the values or options

Sevice menu sub pages: Press Red, Green or Blues key to access sub pages of service mode

Feature Options

TUNER	: TEMIC, P.SONIC, SHARP&ALPS, PHILIPS
TELETEXT	: DEFAULT -Teletext FASTEXT-Fastext TOPTEXT- Toptext TOP&FAST : Toptext and Fastext
SWAP / ZAP:	SWAP- Swap is active ZAP: Zap is active
STAND BY:	YES- User mode NO: Factory mode
VIDEO	: OLD, NEW-No function
MONITOR	: Yes (Monitor connection is available) : No (Monitor connection is not supported)
LANGUAGE	: Used to select the menu language. GROUP 0 : (English, German, French, Itailan, Spanish, Turkish , Swiss , Norwegian, Danish, Finnish , Dutch, Polish, Greek, Bulgarian, Russian, Hebrew) GROUP 1: (English,German, French, Itailan, Spanish, Turkish ,Swiss, Hungary, Polish, Romanian, Croatian , Slovenian, Greek, Bulgarian, Russian, Arabian)

BG : Yes (AVAILABLE) or No (NOT AVAILABLE)
DK : Yes (AVAILABLE) or No (NOT AVAILABLE)
I : Yes (AVAILABLE) or No (NOT AVAILABLE)
L/L' : Yes (AVAILABLE) or No (NOT AVAILABLE)
NICAM : Yes (AVAILABLE) or No (NOT AVAILABLE)
HEADPHONE : Yes (AVAILABLE) or No (NOT AVAILABLE)

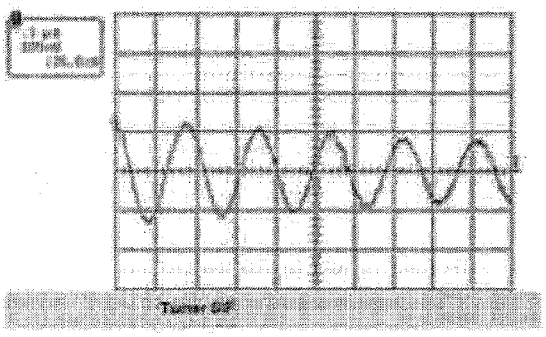
CARRIER MUTE : VIA MSP (Default)
VIA MICRO

Factory Settings for Service Mode

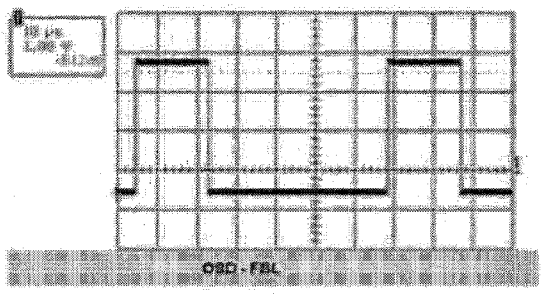
ITEM	FUNCTION	FACTORY VALUE
AGC	AUTOMATIC GAIN CONTROL	2
R-CUT	RED CUT OF ADJUSTMENT	2
G-CUT	GREEN CUT OF ADJUSTMENT	0
B-CUT	BLUE CUT OF ADJUSTMENT	0
R.DRV	RED DRIVE ADJUSMENT	0
G.DRV	GREEN DRIVE ADJUSMENT	0
B.DRV	BLUE DRIVE ADJUSMENT	0
BACKLIGHT	BACK LIGHT ADJUSTMENT	0

WAVEFORMS

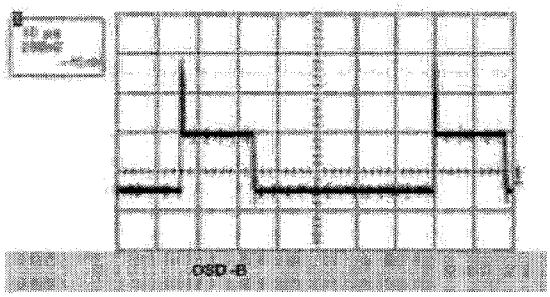
Note : TV is connected to a pattern generator with colour bar signal and L=3KHz, R=1KHz



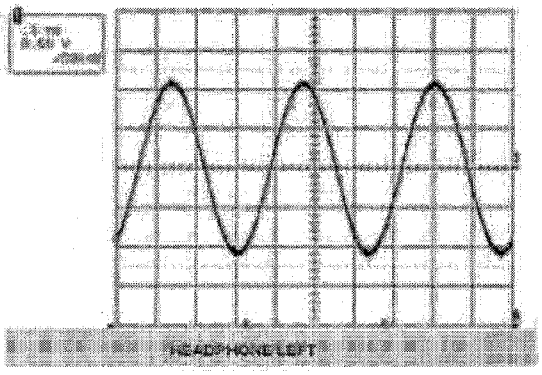
Tuner SIF



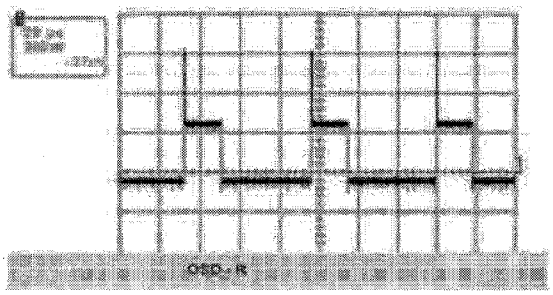
OSD - FBL



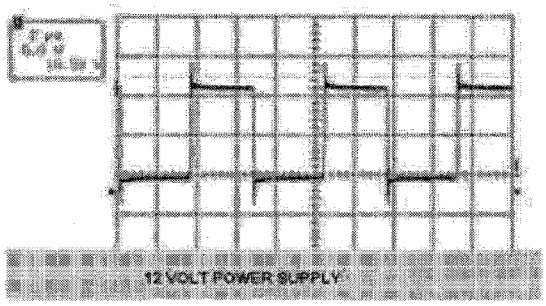
OSD -B



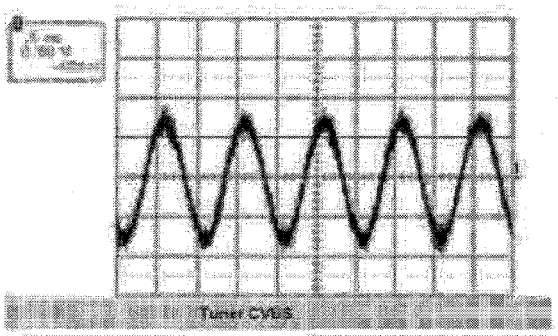
HEADPHONE LEFT



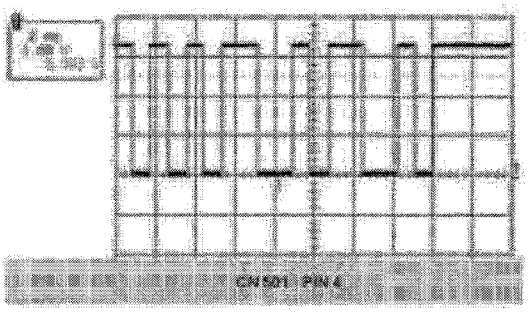
OSD - R



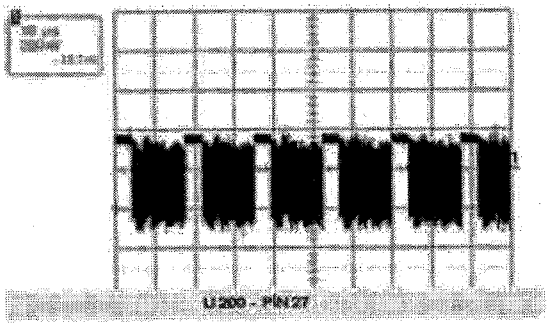
12 VOLT POWER SUPPLY

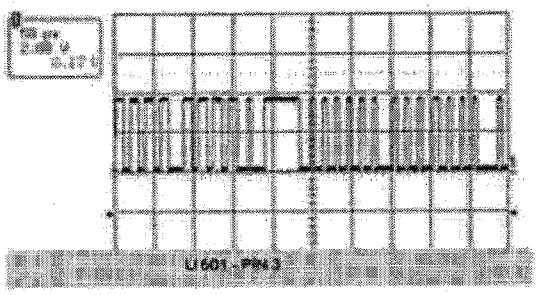


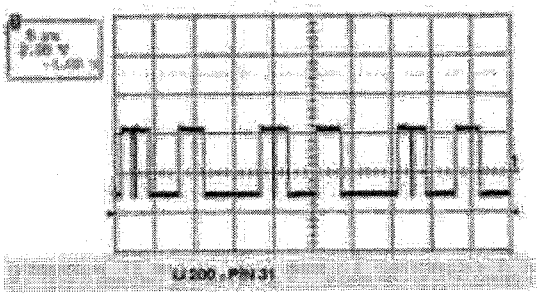
Tuner CVBS

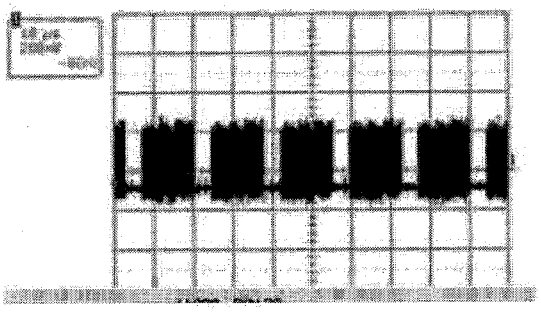


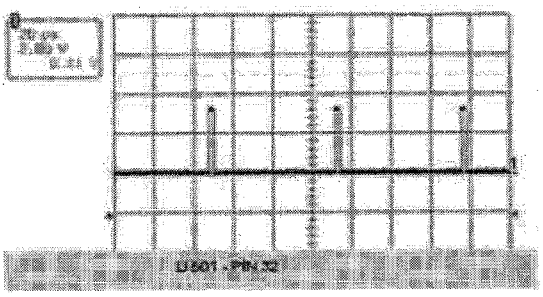
CN501 PIN 4

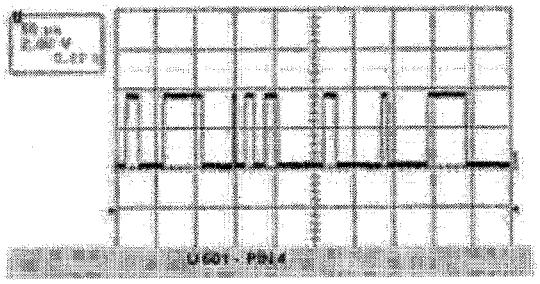

U 200 - PIN 27

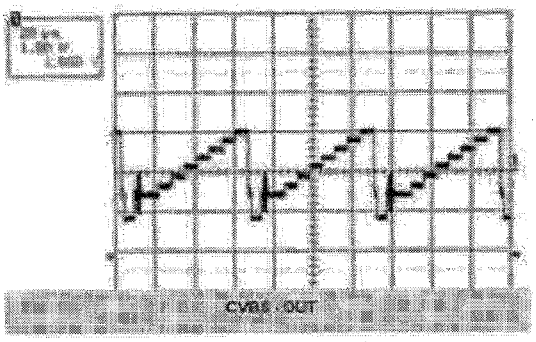

U 601 - PIN 3

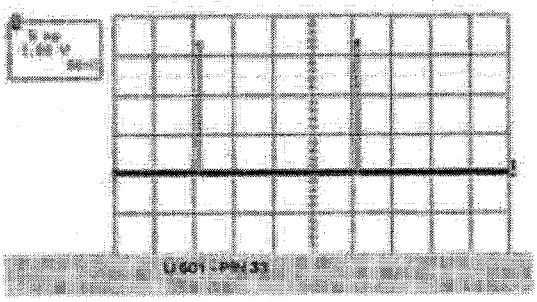

U 200 - PIN 31




U 501 - PIN 32


U 601 - PIN 4


CVBS - OUT


U 601 - PIN 33

SPARE PART LIST

POSITION	PART NUMBER	PART DESCRIPTION
S1	010717	POWER SWITCH SPEA121800 ALPS
MENU	010860	TACT SW LONG STEN
P(+)	010860	TACT SW LONG STEN
P(-)	010860	TACT SW LONG STEN
V(+)	010860	TACT SW LONG STEN
V(-)	010860	TACT SW LONG STEN
CN103	031163	KONN. CINCH ..... WHITE HOR.14.1
CN110	031163	KONN. CINCH ..... WHITE HOR.14.1
CN102	031164	KONN. CINCH ..... RED HOR.14.1
CN111	031164	KONN. CINCH ..... RED HOR.14.1
CN101	031165	KONN. CINCH ..... YELLOW HOR.14.1
CN105	031251	SCART SOCKET 14.1
CN900	031274	JACK POWER HORIZONTAL
CN502	031277	KON.MALE 12 PIN MOLEX 53261-1290 T&R
CN601	031315	KON.MALE 30 PIN JAE DF9-41P-1V
CN301	031358	CONN. VGA B10B
CN100	031795	KONN.S-VHS
F900	054290	FUSE 5.0A 250V ROUND
X400	056161	CRYSTAL 20.25MHZ HC49-U
Q01	056210	CER.RESONATOR GSB455E
X600	056942	KRISTAL 24MHZ
X100	056952	CRYSTAL 18.432MHZ +-30PPM
X500	056953	CRYSTAL 6MHZ CL 20PF
C902	232335	C-ELA 330UF 35V 16*10 R:5 LOW ESR
D1	302409	LED BLUE
D903	303180	DIODE 1N5820 SCHOTTKY
D500	303189	DIODE BAS40-05 SCHOTTKY
D501	303196	DIODE BAS40 SCHOTTKY
D900	303345	DIODE MRA4003T3
D901	303345	DIODE MRA4003T3
D902	303345	DIODE MRA4003T3
D01	303991	LED IR SIR563SB3F 23/940
D02	303993	LED LTL4221N D:3 R/D RED
Q500	401371	TRN 2N7002
Q501	401371	TRN 2N7002
U701	401372	TRN FDS9933A
U906	401372	TRN FDS9933A
U207	450514	IC MC7812CDT DPAK
U206	450515	IC 74FCT244CT SOIC
U204	450516	IC 74FCT162374AT TSSOP
U205	450516	IC 74FCT162374AT TSSOP
U1	450517	IC CHIP MMSF7P03HDR2
IC01	452382	IC-CHIP S3C1840DA9/SMB1 T&R
IR1	452521	IR RECEIVER TSOP 1838
U102	452904	IC LM78L08ACZ

SPARE PART LIST

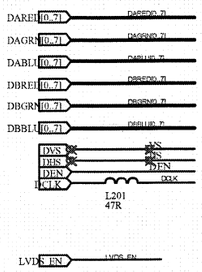
POSITION	PART NUMBER	PART DESCRIPTION
U400	452937	IC-CHIP VPC3230D-C5 QFP80 T&R
U401	452985	IC-CHIP MC14053BD SOIC16
U505	453001	IC M29W040B70N1T
U600	453004	IC GM5020
U502	453006	IC K6X1008T2D-TF70
U900	453007	IC LM2596S-5.0
U901	453008	IC LP3962ES-2.5
U902	453009	IC LP3962ES-3.3
U300	453010	IC M24C02-MN1T
	453013	IC SDA5550 PLCC-84 TRAY
U103	453021	IC TDA1517P
U503	453024	IC MC33375ST-2.5T3
U504	453025	IC MC33375ST-3.3T3
U101	453026	IC-CHIP MSP3410G PQFP80 T&R
U500	453028	IC DS1818R-10/T&R
U800	453101	IC K4S161622E-TC70
U801	453101	IC K4S161622E-TC70
U802	453101	IC K4S161622E-TC70
	600303	TERMINAL BATT.BOX(+-) R/C
	056L20-LP1	LCD LG-PHILIPS LC201V02 (20" LCD TV)
U506	452662-02	IC-CHIP AT24C16AN 10SI2.7 TAPE&REEL
	7XB301	TERMINAL BATT.BOX(+) R/C FLAT
	7XB302	TERMINAL BATT.BOX(-) R/C FLAT
	7XB901	RUBBER CONTACT PURE FLAT COMMON 14.1
	8R8138	TUNER FRONTEND PHILIPS FQ1216ME
X941	8R9185	HP JACK 17"LCD TV
	S01903	CUSHION 28T39/T40/T47
	S89187F	RC FLAT B-TYPE SMART C/TV/PC S.LI SI.VGA
U501	SL2200-01	SW/IC SDA5550 PLCC-84 TRAY 20" LCD TV
	ZC5107-AS	SPEAKER 8R 5W 20 LCD TV
	ZC5205-03F	BACK COVER 20L22 LCDTV MET.DARK BLUE VGA
	ZC5206F	SCART BACK COVER 20" LCD TV MET.DA.BLUE
	ZC5805	CUSHION LEFT 20" LCD TV
	ZC5806	CUSHION RIGHT 20" LCD TV
	ZH1110	L2 CHASIS 20"LCD TV PI/NX/2/K/SV/VGA A-O
	ZH1172	CU ASSY 20L2L22
	ZH1201F	FRONT COVER 20"L22 LCD TV SILVER
	ZH1204F	LENS IR/LED 15"L02 LCD TV
	ZH1800-00A	GIFT BOX BEKO/PI.20L2L22 PI/NX/2/K/S/VGA
	ZH1913	ADAPTOR AC 15V 4.6A 20" H&E SAD7015SE

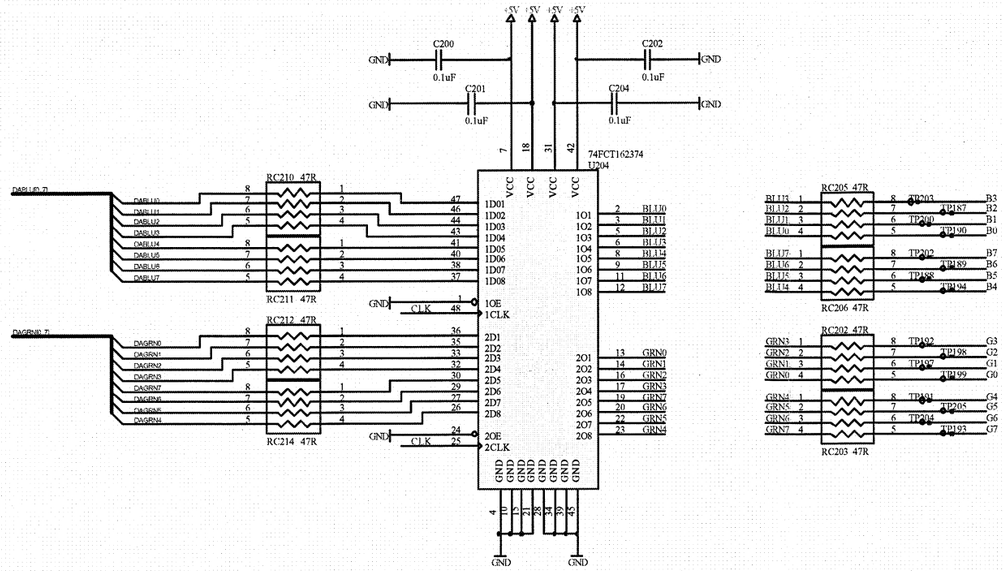
FREQUENCY TABLE (MHz)

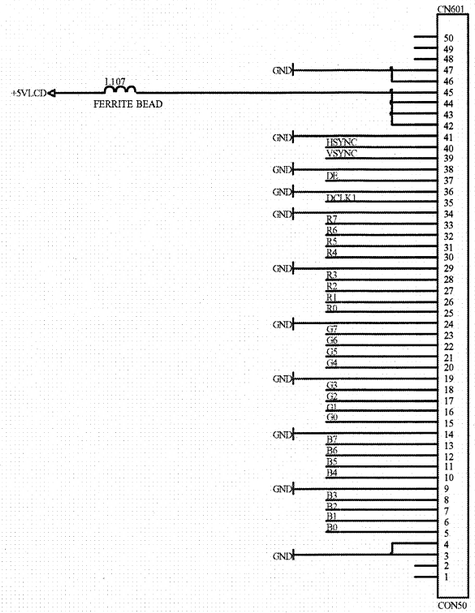
Channel	Number	BG	I	DK	L/L'
CH	1		49.75	49.75	47.75
CH	2	48.25	59.25	59.25	55.75
CH	3	55.25	77.25	77.25	60.50
CH	4	62.25	85.25	85.25	63.75
CH	5	175.25	93.25	93.25	176.00
CH	6	182.25	175.25	175.25	184.00
CH	7	189.25	183.25	183.25	192.00
CH	8	196.25	191.25	191.25	200.00
CH	9	203.25	199.25	199.25	208.00
CH	10	210.25	207.25	207.25	216.00
CH	11	217.25	215.25	215.25	189.25
CH	12	224.25	223.25	223.25	182.25
CH	13	53.75	45.75		196.25
CH	14	62.25	53.75		210.25
CH	15	82.25	61.75		
CH	16	175.25	69.75		
CH	17	183.25	95.25		
CH	18	192.25			
CH	19	201.25			
CH	20	210.25			
CH	21	471.25	471.25	471.25	471.25
CH	22	479.25	479.25	479.25	479.25
CH	23	487.25	487.25	487.25	487.25
CH	24	495.25	495.25	495.25	495.25
CH	25	503.25	503.25	503.25	503.25
CH	26	511.25	511.25	511.25	511.25
CH	27	519.25	519.25	519.25	519.25
CH	28	527.25	527.25	527.25	527.25
CH	29	535.25	535.25	535.25	535.25
CH	30	543.25	543.25	543.25	543.25
CH	31	551.25	551.25	551.25	551.25
CH	32	559.25	559.25	559.25	559.25
CH	33	567.25	567.25	567.25	567.25
CH	34	575.25	575.25	575.25	575.25
CH	35	583.25	583.25	583.25	583.25
CH	36	591.25	591.25	591.25	591.25
CH	37	599.25	599.25	599.25	599.25
CH	38	607.25	607.25	607.25	607.25
CH	39	615.25	615.25	615.25	615.25
CH	40	623.25	623.25	623.25	623.25
CH	41	631.25	631.25	631.25	631.25
CH	42	639.25	639.25	639.25	639.25
CH	43	647.25	647.25	647.25	647.25
CH	44	655.25	655.25	655.25	655.25

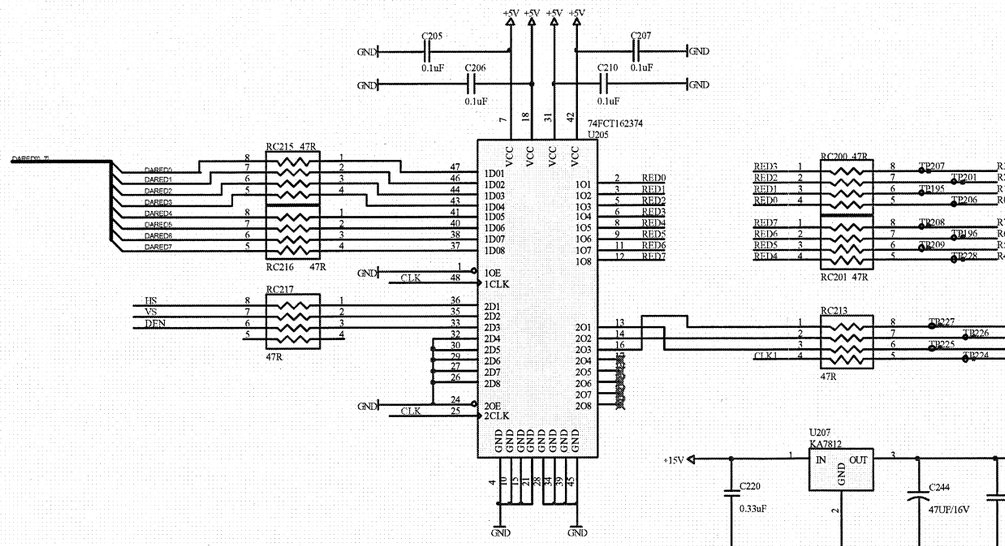
Channel	Number	BG	I	DK	L/L'
CH	45	663.25	663.25	663.25	663.25
CH	46	671.25	671.25	671.25	671.25
CH	47	679.25	679.25	679.25	679.25
CH	48	687.25	687.25	687.25	687.25
CH	49	695.25	695.25	695.25	695.25
CH	50	703.25	703.25	703.25	703.25
CH	51	711.25	711.25	711.25	711.25
CH	52	719.25	719.25	719.25	719.25
CH	53	727.25	727.25	727.25	727.25
CH	54	735.25	735.25	735.25	735.25
CH	55	743.25	743.25	743.25	743.25
CH	56	751.25	751.25	751.25	751.25
CH	57	759.25	759.25	759.25	759.25
CH	58	767.25	767.25	767.25	767.25
CH	59	775.25	775.25	775.25	775.25
CH	60	783.25	783.25	783.25	783.25
CH	61	791.25	791.25	791.25	791.25
CH	62	799.25	799.25	799.25	799.25
CH	63	807.25	807.25	807.25	807.25
CH	64	815.25	815.25	815.25	815.25
CH	65	823.25	823.25	823.25	823.25
CH	66	831.25	831.25	831.25	831.25
CH	67	839.25	839.25	839.25	839.25
CH	68	847.25	847.25	847.25	847.25
CH	69	855.25	855.25	855.25	855.25
CH	70		863,25		863.25
CH	71		871,25		
CH	72		879,25		
CH	73		887,25		160.00
CH	74	69.25			172.00
CH	75	76.25			220.00
CH	76	83.25			232.00
CH	77	90.25			244.00
CH	78	97.25			256.00
CH	79	59.25			268.00
CH	80	93.25			280.00
S	1	105.25	103.25	103.25	116.75
S	2	112.25	111.25	111.25	128.75
S	3	119.25	119.25	119.25	140.75
S	4	126.25	127.25	127.25	152.75
S	5	133.25	135.25	135.25	164.75
S	6	140.25	143.25	143.25	176.75
S	7	147.25	151.25	151.25	188.75
S	8	154.25	159.25	159.25	200.75
S	9	161.25	167.25	167.25	212.75
S	10	168.25	231.25	231.25	224.75
S	11	231.25	239.25	239.25	236.75
S	12	238.25	247.25	247.25	248.75
S	13	245.25	255.25	255.25	260.75
S	14	252.25	263.25	263.25	272.75

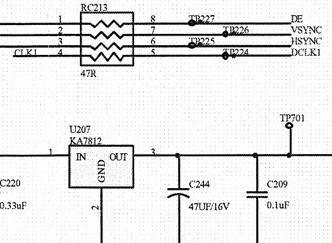
Channel	Number	BG	I	DK	L/L'
S	15	259.25	271.25	271.25	284.75
S	16	266.25	279.25	279.25	296.75
S	17	273.25	287.25	287.25	55.75
S	18	280.25	295.25	295.25	60.50
S	19	287.25	303.25	303.25	63.75
S	20	294.25			
S	21	303.25			303.25
S	22	311.25	311.25	311.25	311.25
S	23	319.25	319.25	319.25	319.25
S	24	327.25	327.25	327.25	327.25
S	25	335.25	335.25	335.25	335.25
S	26	343.25	343.25	343.25	343.25
S	27	351.25	351.25	351.25	351.25
S	28	359.25	359.25	359.25	359.25
S	29	367.25	367.25	367.25	367.25
S	30	375.25	375.25	375.25	375.25
S	31	383.25	383.25	383.25	383.25
S	32	391.25	391.25	391.25	391.25
S	33	399.25	399.25	399.25	399.25
S	34	407.25	407.25	407.25	407.25
S	35	415.25	415.25	415.25	415.25
S	36	423.25	423.25	423.25	423.25
S	37	431.25	431.25	431.25	431.25
S	38	439.25	439.25	439.25	439.25
S	39	447.25	447.25	447.25	447.25
S	40	455.25	455.25	455.25	455.25
S	41	463.25	463.25	463.25	463.25

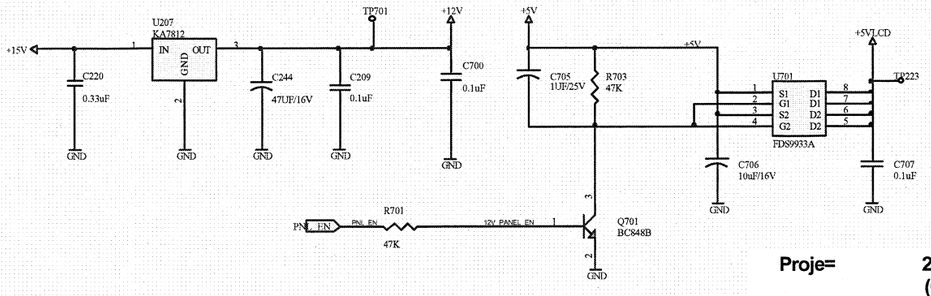


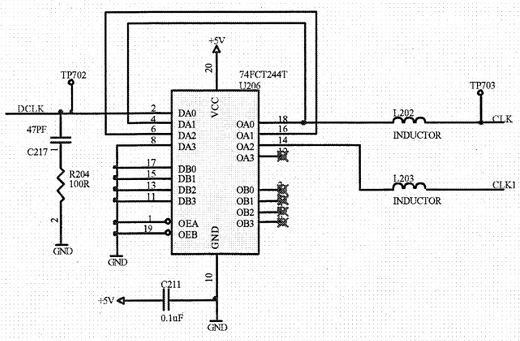






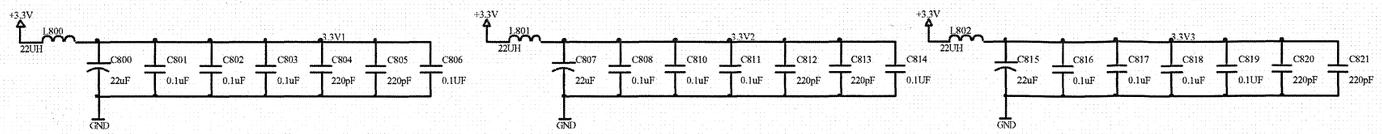


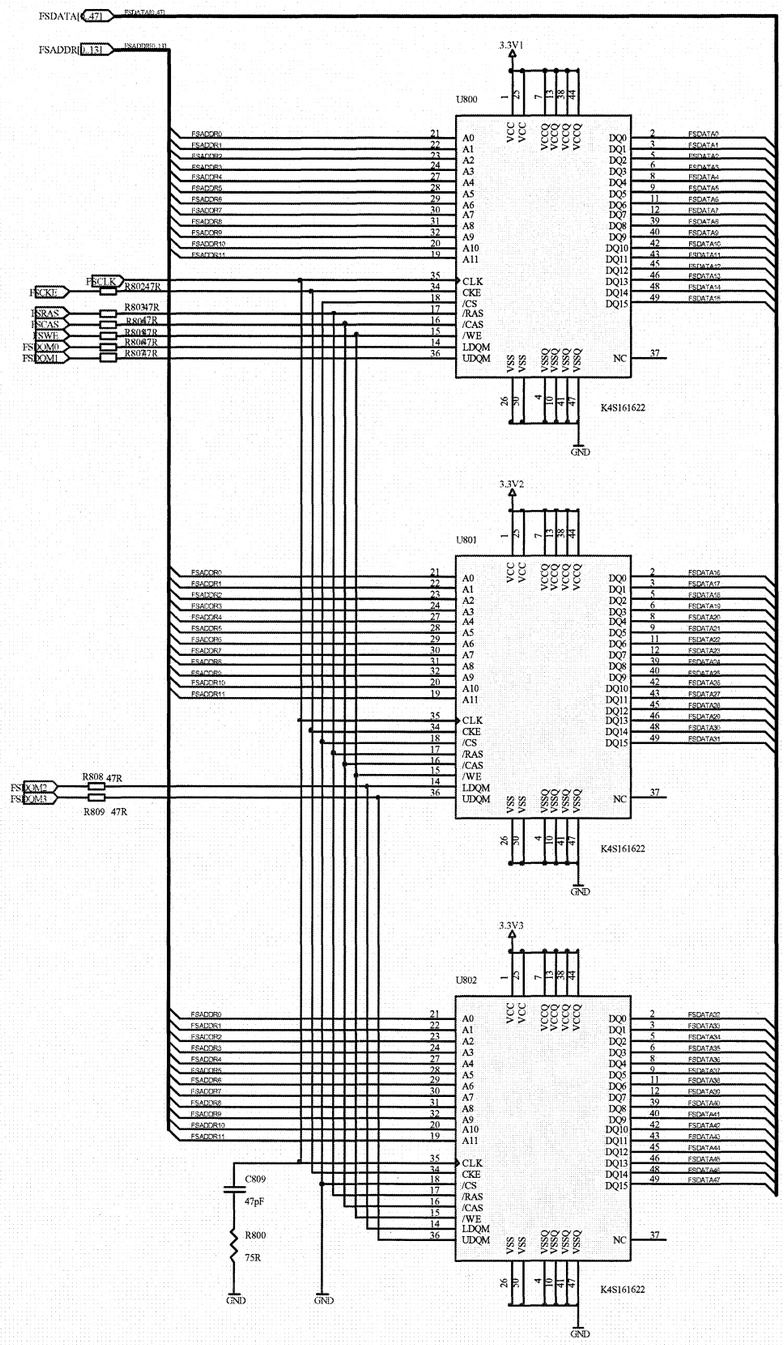


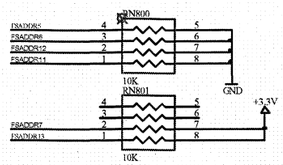


Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
Schematic= DISPLAY

Beko Elektronik A.S.		
Size C	Title 5. Display	Rev A
Document Number	Control	
Date 24-Sep-2003	Sheet 7 of 9	

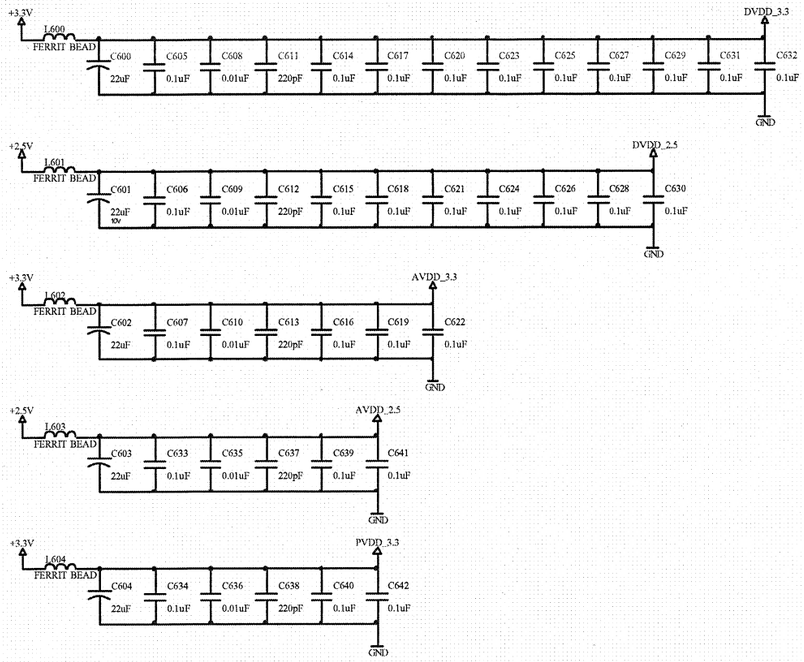






Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
Schematic= FRAME STORE

Beko Elektronik A.S.		
Size C	Title 6. Frame Store	Rev A
Document Number	Control	
Date 24-Sep-2003	Sheet 8 of 9	

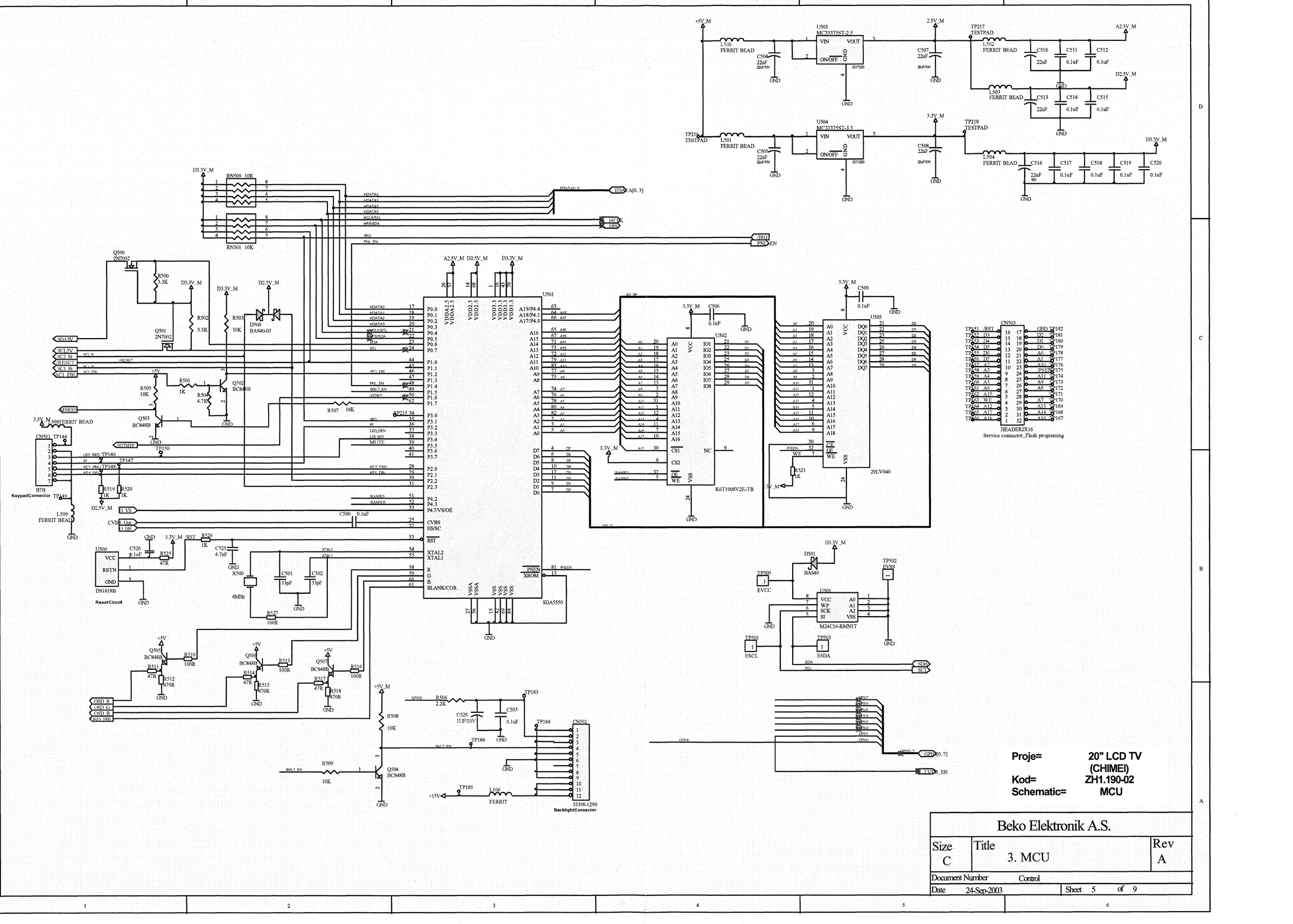


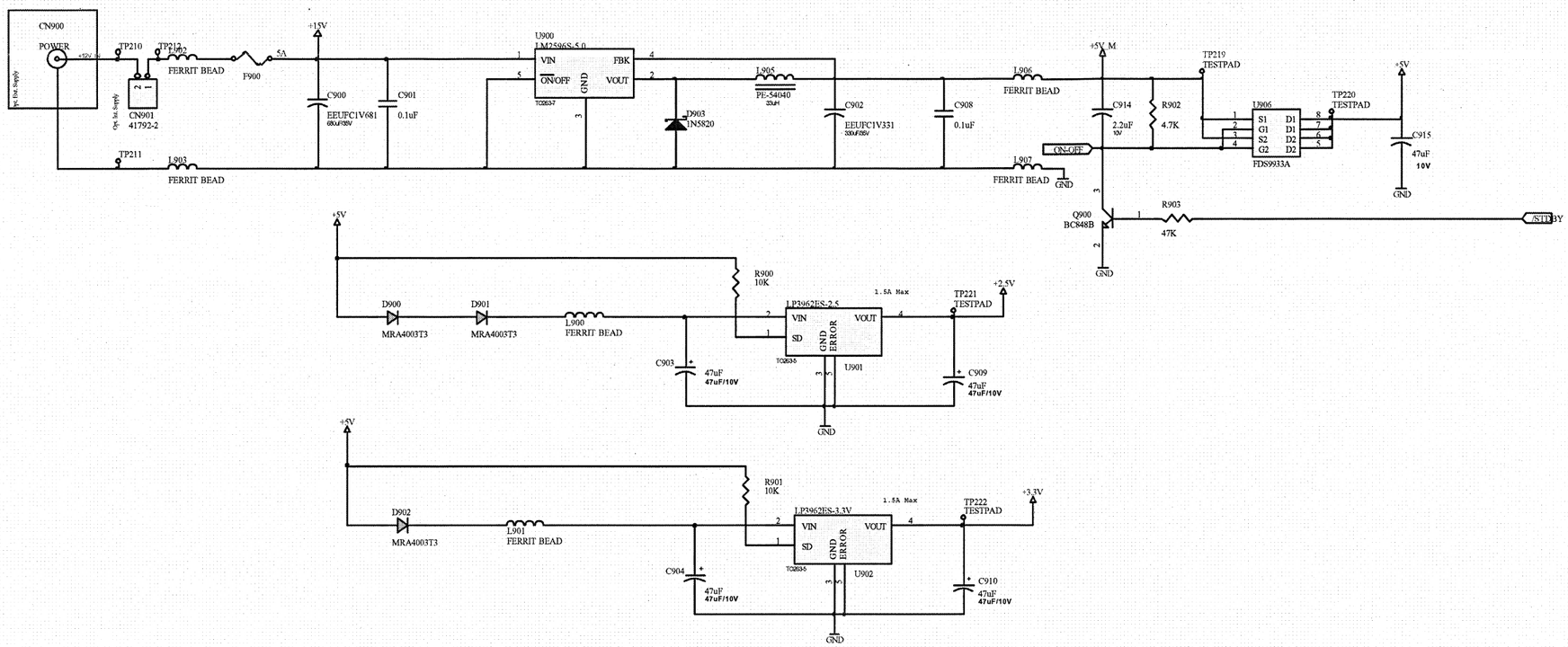
Proje= 20" LCD TV (CHIMEI)

Kod= ZH1.190-02

Schematic= GM5020

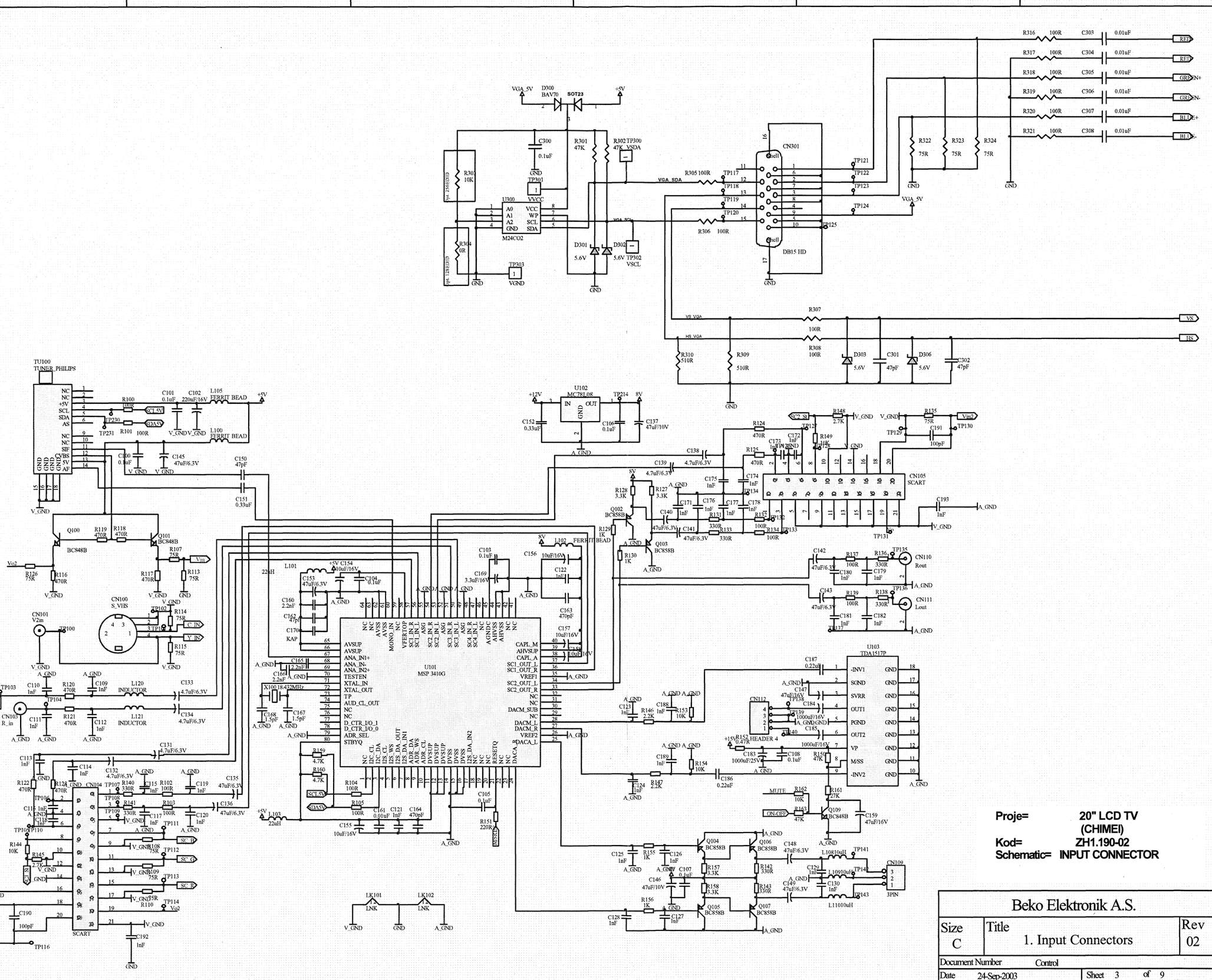
Beko Elektronik A.S.		
Size C	Title 4. gm5020	Rev A
Document Number Control		
Date 24-Sep-2003	Sheet 6 of 9	

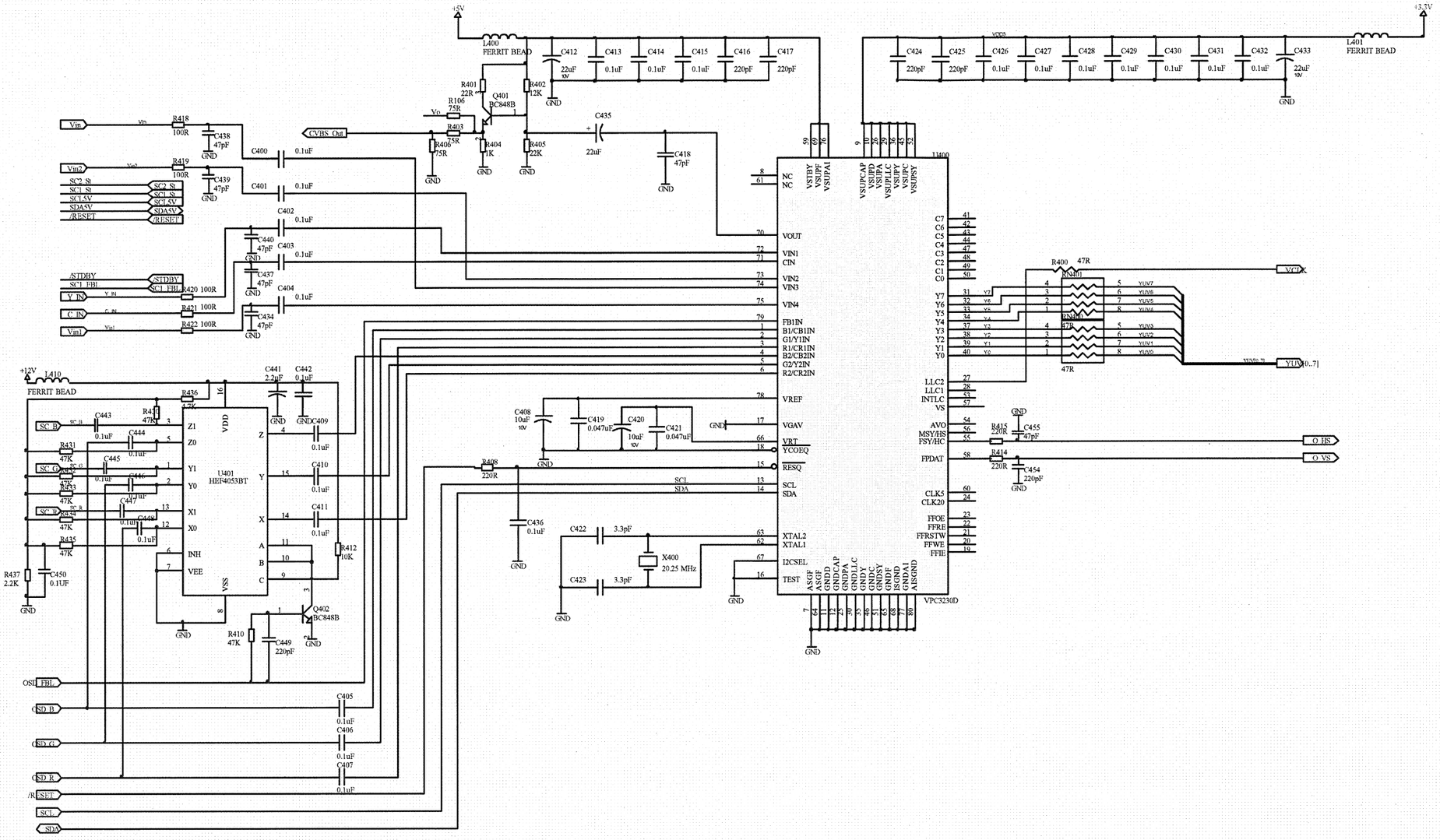

+5V_M
U503
MC33375ST-2.5
VIN
VOUT
ON/OFF
GND
SOT223
L500
FERRIT BEAD
C504
22uF
22uF/10V
2.5V_M
C507
22uF
TP217
TESTPAD
A2.5V_M
L502
FERRIT BEAD
C510
22uF
C511
0.1uF
C512
0.1uF
D2.5V_M
L503
FERRIT BEAD
C513
22uF
C514
0.1uF
C515
0.1uF
U504
MC33375ST-3.3
3.3V_M
C508
22uF
TP216
TESTPAD
L501
FERRIT BEAD
C505
22uF
TP218
TESTPAD
D3.3V_M
L504
FERRIT BEAD
C516
22uF
10V
C517
0.1uF
C518
0.1uF
C519
0.1uF
C520
0.1uF
RN500 10K
RN501 10K
HDATA0
HDATA1
HDATA2
HDATA3
H2LKSCL
HFBSDA
HDATA[0..3]
HCLK
LHS
/IRQ
PNL_EN
JIRQ
PNLEN
Q500
2N7002
R500
3.3K
Q501
2N7002
R502
3.3K
R503
10K
D500
BAS40-05
SDA_5V
SCL_5V
SC2_SI
/RESET
SC1_SI
SCL_FBL
R505
10K
R501
1K
Q502
BC848B
R504
4.7K
/MSRES
Q503
BC848B
R507
10K
/SCL_FBL
PNL_EN
/HOT_EN
/STDBY
/IRQ
IR
LED_GRN
LED_RED
MUTE
KEY_PAD
KEY_DBL
/RAMRD
/RAMWR
CVBS_Out
H_HS
C500
0.1uF
/RST
R526
1K
C525
4.7nF
C526
0.1uF
R525
47R
U500
VCC
RSTN
GND
DS1818B
ResetCircuit
X500
6MHz
C501
33pF
C502
33pF
R527
100R
XTAL2
XTAL1
R
G
B
BLANK/COR
/PSEN
XROM
SDA5550
U501
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P3.0
P3.1
P3.2
P3.3
P3.4
P3.5
P3.6
P3.7
P2.0
P2.1
P2.2
P2.3
P4.2
P4.3
P4.7/VS/OE
A19/P4.4
A18/P4.1
A17/P4.0
A16
A15
A14
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
D7
D6
D5
D4
D3
D2
D1
D0
U502
K6T1008V2E-TB
IO1
IO2
IO3
IO4
IO5
IO6
IO7
IO8
CS1
NC
CS2
OE
WE
VCC
VSS
C506
0.1uF
U505
29LV040
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
C509
0.1uF
/PSEN
CE
OE
WE
VSS
R521
1K
CN503
HEADER2X16
Service connector_Flash programing
/RST
D3
D4
D5
D6
D7
A5
A6
A15
WE
A12
A17
A18
GND
D2
D1
D0
A0
A1
A2
A3
A4
A7
A8
A9
A10
A11
A13
A14
A16
CN501
B7B
KeypadConnector
TP144
TP146
TP147
TP148
TP149
TP150
R519
1K
R520
1K
L509
FERRIT BEAD
R508
FERRIT BEAD
NCDRY
D2.5V_M
OSD_VS
CVBS_Out
H_HS
Q505
BC848B
Q506
BC848B
Q507
BC848B
R510
100R
R511
47R
R512
470R
R513
100R
R514
47R
R515
470R
R516
100R
R517
47R
R518
470R
OSD_R
OSD_G
OSD_B
OSD_FBL
+5V_M
R508
10K
R509
10K
Q504
BC848B
/HOT_EN
TP183
TP184
TP185
TP186
R506
2.2K
C528
1UF/10V
C503
0.1uF
L106
FERRIT
+15V
CN502
5339S-1290
BacklightConnector
D501
BAS40
TP500
EVCC
TP502
EVSS
U506
M24C16-RMN1T
VCC
WP
SCK
SI
A0
A1
A2
VSS
TP501
ESCL
TP503
ESDA
SDA
SCL
GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO[0..7]
LVDS_EN
Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
Schematic= MCU
Beko Elektronik A.S.
Size C
Title 3. MCU
Rev A
Document Number Control
Date 24-Sep-2003
Sheet 5 of 9



Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
Schematic= POWER

Beko Elektronik A.S.		
Size C	Title 7. Power	Rev A
Document Number Control		
Date 24-Sep-2003	Sheet 9 of 9	


VGA_5V
D300 BAV70 SOT23
+5V
C300 0.1uF
R301 47K
R302 47K VSDA
TP300
R303 10K
TP301
U300 M24CO2
VCC
WP
SCL
SDA
VGA_SDA
R305 100R
VGA_SCL
R306 100R
R304 0R
TP303 VGND
D301 5.6V
D302 5.6V
TP302 VSCL
CN301 DB15 HD
TP117
TP118
TP119
TP120
TP121
TP122
TP123
TP124
TP125
R322 75R
R323 75R
R324 75R
R316 100R C303 0.01uF RED
R317 100R C304 0.01uF RED
R318 100R C305 0.01uF GREEN+
R319 100R C306 0.01uF GREEN-
R320 100R C307 0.01uF BLUE+
R321 100R C308 0.01uF BLUE-
R307 100R
VS_VGA
HS_VGA
R308 100R
R310 510R
R309 510R
D303 5.6V
C301 47pF
D306 5.6V
C302 47pF
VS
HS
TU100 TUNER_PHILIPS
NC
NC
+5V
SCL
SDA
AS
NC
NC
SIF
CVBS
5V
AF
R100 100R
SCL_5V
SDA_5V
TP230
TP231
R101 100R
C101 0.1uF
C102 220uF/16V
L105 FERRIT BEAD
L100 FERRIT BEAD
C100 0.1uF
C145 47uF/6.3V
C150 47pF
C151 0.33uF
V_GND
Q100 BC848B
Q101 BC848B
R119 470R
R118 470R
R107 75R
R117 470R
R113 75R
R126 75R
R116 470R
Vo2
Vin
CN100 S_VHS
C_IN
Y_IN
TP102
TP100
R114 75R
R115 75R
CN101 V2in
CN102 L_in
CN103 R_in
TP103
TP104
C110 1nF
R120 470R
C109 1nF
L120 INDUCTOR
C133 4.7uF/6.3V
C111 1nF
R121 470R
C112 1nF
L121 INDUCTOR
C134 4.7uF/6.3V
C131 4.7uF/6.3V
C113 1nF
C114 1nF
C132 4.7uF/6.3V
C135 47uF/6.3V
C136 47uF/6.3V
R122 470R
R123 470R
C104 0.1uF
TP105
TP106
TP107
TP108
TP109
TP110
TP111
R140 330R
R141 330R
C115 1nF
C116 1nF
C117 1nF
C118 1nF
C119 1nF
C120 1nF
R102 100R
R103 100R
R144 10K
R145 2.7K
SCART
SC_B
SC_G
SC_R
R108 75R
R109 75R
R110 75R
TP112
TP113
TP114
TP115
TP116
R111 75R
R112 75R
C190 100pF
C192 1nF
L101 22uH
C153 47uF/6.3V
C154 10uF/16V
C104 0.1uF
C160 2.2nF
C162 47pF
C170 KAP
U101 MSP 3410G
AVSUP
ANA_IN1+
ANA_IN-
ANA_IN2+
TESTEN
XTAL_IN
XTAL_OUT
TP
AUD_CL_OUT
D_CTR_I/O_1
D_CTR_I/O_0
ADR_SEL
STBYQ
CAPL_M
CAPL_A
SC1_OUT_L
SC1_OUT_R
VREF1
SC2_OUT_L
SC2_OUT_R
DACM_SUB
DACM_L
DACM_R
VREF2
DACA_L
C165 2.2nF
C166 2.2nF
X100 18.432MHz
C168 1.5pF
C167 1.5pF
R159 4.7K
R160 4.7K
SCL_5V
SDA5V
R104 100R
R105 100R
C161 0.01uF
C121 1nF
C164 470nF
C155 10uF/16V
L103 22uH
C105 0.1uF
R151 220R
MSKEY
C103 0.1uF
C169 3.3uF/16V
C156 10uF/16V
L102 FERRIT BEAD
C122 1nF
C163 470pF
C157 10uF/16V
C158 100nF/16V
U102 MC78L08
IN
GND
OUT
+12V
TP214
8V
C152 0.33uF
C106 0.1uF
C137 47uF/10V
A_GND
C138
C139 4.7uF/6.3V
R124 470R
R125 470R
C174 1nF
C175 1nF
C171 1nF
C176 1nF
C177 1nF
C178 1nF
C140 47uF/6.3V
C141 47uF/6.3V
R128 3.3K
R127 3.3K
Q102 BC858B
Q103 BC858B
R129 1K
R130 1K
TP134
R131 330R
R133 330R
R132 100R
R134 100R
TP132
TP133
SC2_SL
R148 2.7K
TP127
R149 10K
12k
C172 1nF
C173 1nF
C191 100pF
TP129
TP130
Vin2
R135 75R
CN105 SCART
TP131
C193 1nF
C142 47uF/6.3V
C180 1nF
R137 100R
R136 330R
C179 1nF
CN110 Rout
C143 47uF/6.3V
C181 1nF
R139 100R
R138 330R
C182 1nF
CN111 Lout
TP135
TP136
TP137
U103 TDA1517P
-INV1
SGND
SVRR
OUT1
PGND
OUT2
VP
M/SS
-INV2
C187 0.22uF
C147 47uF/6.3V
C184 1000uF/16V
C185 1000uF/16V
C183 1000uF/25V
C108 0.1uF
R150 47K
C186 0.22uF
C188 1nF
R146 2.2K
R153 10K
C123 1nF
C189 1nF
R154 10K
C124 1nF
R147 2.2K
CN112 HEADER 4
R152 0.47R
MUTE
ON-OFF
R162 10K
R163 47K
R161 27K
Q109 BC848B
C159 47uF/16V
C125 1nF
R155 1K
C126 1nF
Q104 BC858B
Q106 BC858B
R157 3.3K
R142 330R
C107 0.1uF
C146 47uF/10V
R158 3.3K
R143 330R
R156 1K
Q105 BC858B
Q107 BC858B
C127 1nF
C128 1nF
C148 47uF/6.3V
L10810uH
TP141
C129 1nF
L10910uH
TP142
C149 47uF/6.3V
C130 1nF
TP143
L11010uH
CN109 3PIN
LK101 LNK
LK102 LNK
Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
Schematic= INPUT CONNECTOR
Beko Elektronik A.S.
Size C
Title 1. Input Connectors
Rev 02
Document Number Control
Date 24-Sep-2003
Sheet 3 of 9



Proje= 20" LCD TV (CHIMEI)
Kod= ZH1.190-02
schematic= VIDEO DECODER

Beko Elektronik A.S.		
Size C	Title 2. Video Decoder	Rev A
Document Number Control		
Date 24-Sep-2003	Sheet 4 of 9	